GOLD JEWELRY AND ORNAMENTS FOUND NEAR THE CITY OF MEXICO.

THE NATIONAL ENCYCLOPEDIA OF REFERENCE

AUTHORITATIVE PRACTICAL COMPLETE

AN AMERICAN LIBRARY

—EMBRACING—

SCIENCE SOCIOLOGY PHILOSOPHY
HISTORY FINE ARTS LANGUAGES
RELIGION LAW LITERATURE
USEFUL ARTS

—AND—

THE MANY THOUSANDS OF SUBJECTS
INTO WHICH THEY BRANCH

—EDITED BY—

FRANCIS T. FUREY, M.A.
WALTER HART BLUMENTHAL, B.S.E.
CHARLES ANNANDALE, M.A., LL.D.

—ASSISTED BY—

A LARGE BODY OF THE MOST EMINENT AUTHORITIES
IN THE VARIOUS DEPARTMENTS

NEW YORK PHILADELPHIA LONDON
STANDARD BOOKBINDING CO.
1912

AE 5
.N285

Copyright 1912
AMERICAN EDUCATIONAL ASSOCIATION

COPYRIGHT 1912
THE JOHN C. WINSTON CO.

©Cl.A354438

6

706
8-t

120

KEY TO PRONUNCIATION

Three methods are used to indicate the pronunciation of the words forming the headings of the separate articles:

(1) By dividing the word into syllables, and indicating the syllable or syllables to be accented. This method alone is followed where the pronunciation is entirely obvious. Where accent marks are omitted, the omission indicates that all syllables are given substantially the same value.

(2) Where the pronunciation differs from the spelling, the word is re-spelled phonetically, in addition to the accentuation.

(3) Where the sound values of the vowels are not sufficiently indicated merely by an attempt at phonetic spelling, the following system of diacritical marks is additionally employed to approximate the proper sounds as closely as may be done:

ā, as in f*a*te, or in b*a*re.
ä, as in *a*lms, Fr. *â*me, Ger. B*a*hn=â of Indian names.
a, the same sound short or medium, as in Fr. b*a*l, Ger. M*a*nn.
ą, as in f*a*t.
ą̄, as in f*a*ll.
a, obscure, as in rur*a*l, similar to *u* in b*u*t, ė in h*e*r: common in Indian names.
ē, as in m*e*=*i* in mach*i*ne.
e, as in m*e*t.
ė, as in h*e*r.
ī, as in p*i*ne, or as *ei* in Ger. M*ei*n.
i, as in p*i*n, also used for the short sound corresponding to ē, as in French and Italian words.
eu, a long sound as in Fr. *jeûne*,= Ger. long *ö*, as in Söhne, Göthe (Goethe).
eu, corresponding sound short or medium, as in Fr. p*eu*=Ger. *ö* short.
ō, as in n*o*te, m*oa*n.
o, as in n*o*t, frog—that is, short or medium.
ö, as in m*o*ve, two.
ū, as in t*u*be.
u, as in t*u*b: similar to ė and also to *a*.
u̧, as in b*u*ll.
ü, as in Sc ab*u*ne=Fr. *û* as in d*û*, Ger. *ü* long as in gr*ü*n, B*ü*hne.
u̇, the corresponding short or medium sound, as in Fr. b*u*t, Ger. M*ü*ller.
oi, as in *oi*l.
ou, as in p*ou*nd; or as *au* in Ger. H*au*s.

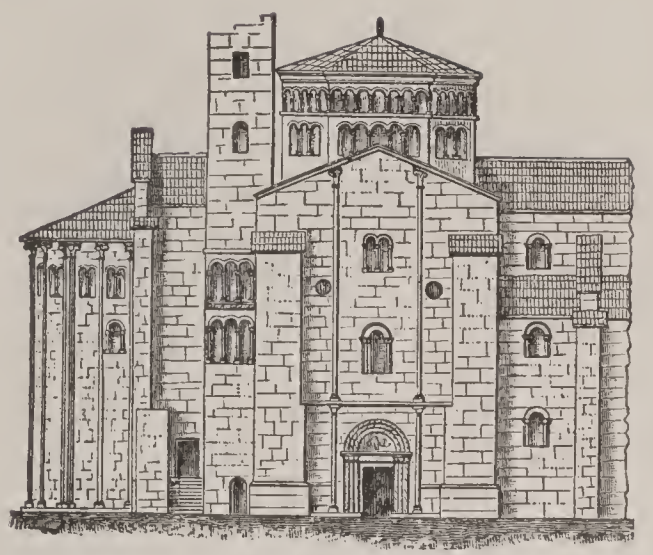
The consonants, b, d, f, h, j, k, l, m, n, ng, p, sh, t, v, and z, when printed in Roman type, are always given their common English values in the transliteration of foreign words. The letter c is indicated by s or k, as the case may be. For the remaining consonant sounds the following symbols are employed:

ch is always as in ri*ch*.
d, nearly as *th* in *th*is = Sp. *d* in Ma*d*rid, etc.
g is always hard, as in *g*o.
h represents the guttural in Scotch lo*ch*, Ger. na*ch*, also other similar gutturals.
n̨, Fr. nasal *n* as in bo*n*.
r represents both English *r*, and *r* in foreign words, in which it is generally much more strongly trilled.
s, always as in *s*o.
th, as *th* in *th*in.
th, as *th* in *th*is.
w always consonantal, as in *w*e.
x = ks, which are used instead.
y always consonantal, as in *y*ea (Fr. *ligne* would be re-written lēny).
zh, as *s* in pleasure = Fr. *j*.

VOLUME VI

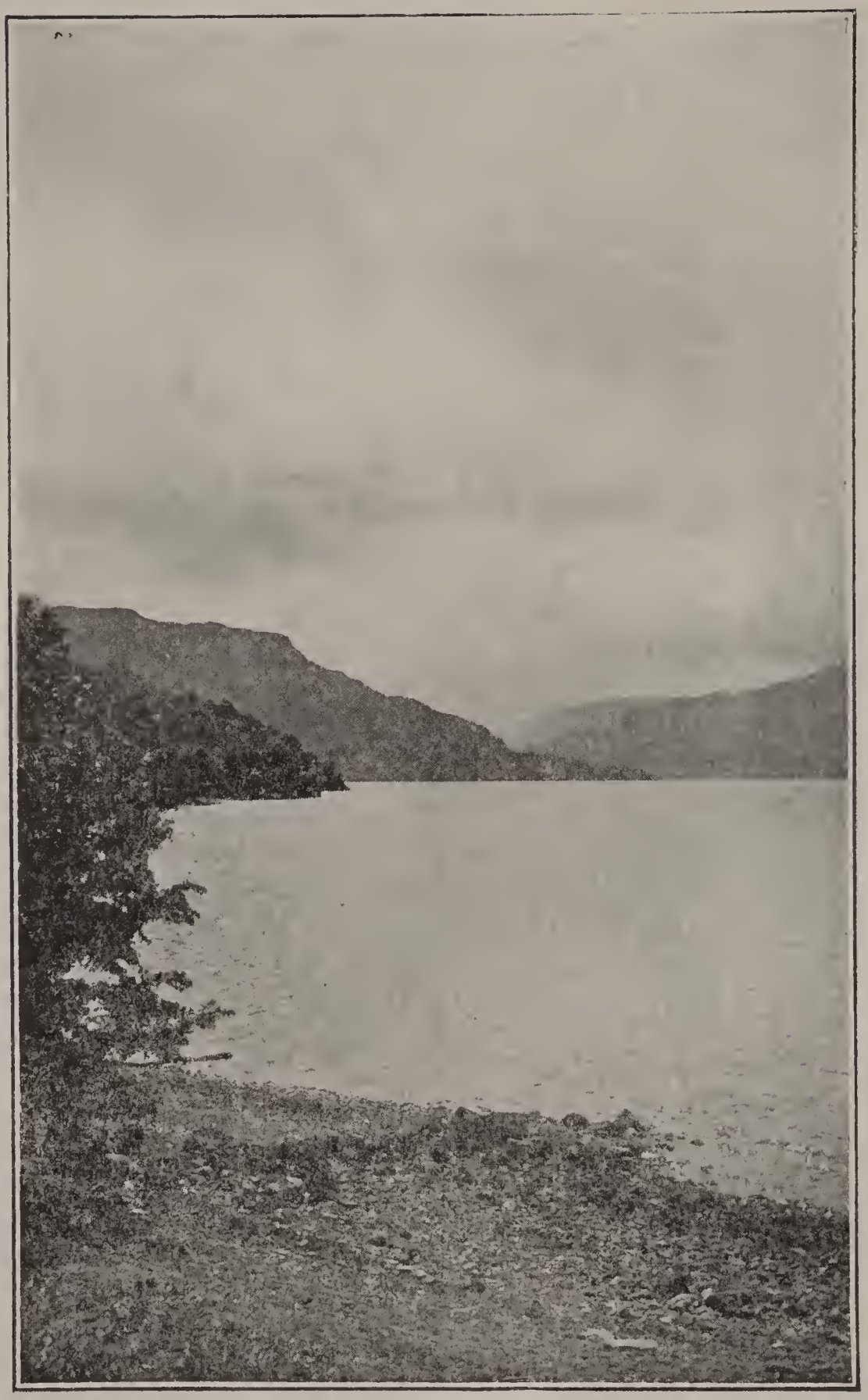
Lombard (lom'bard), PETER, or PETRUS LOMBARDUS, one of the most celebrated of the schoolmen, born near Novara, in Lombardy, about the year 1100. He was a scholar of Abelard in the University of Paris, became a teacher of theology, and at last, in 1159, bishop of Paris, where he seems to have died in 1164. His work *Sententiarum Libri Quatuor* is a classified collection of the opinions of the fathers on points of doctrine, with a statement of the objections made to them, and the answers given by church authorities. Hence he is known as the 'Master of Sentences.'

Lombard Architecture, the form which the Romanesque style of architecture assumed under the hands of the Gothic invaders and colonists of the north of Italy, comprising the buildings erected from about the beginning of the ninth to the beginning of the thirteenth centuries. It forms a connecting link between the Romanized architecture of Italy and the Gothic of more northern countries. The most characteristic feature of the churches built in this style is the general introduction and artistic development of the vault, that feature which afterwards became the formative principle of the whole Gothic style. In the Lombard architecture also pillars consisting of several shafts arranged round a central mass, and buttresses of small projection, appear to have been first employed. The tendency to the prevalence of vertical lines throughout the design, instead of the horizontal lines of the classic architecture, is also characteristic, as well as the use of the dome to surmount the intersection of the choir, nave and transepts. Mr. Fergusson remarks: 'Generally speaking, the most beautiful part of a Lombard church is its eastern end. The apse with its gallery, the transepts, and, above all, the dome that almost invariably surmounts their intersection with the choir, constitute a group which always has a pleasing effect, and is very often highly artistic and beautiful.' As examples of Lombard architecture may be mentioned the church of St. Michael, Pavia; San Zenoni, Verona; and the atrium of San Ambrogio, Milan.



LOMBARD ARCHITECTURE.
Transept, Apse and Dome of St. Michael, Pavia.

Lombards, LONGOBARDI, or LANGOBARDI (so called either from the *long barte* or spear which they carried, or from the *long beards*), a Germanic or Teutonic people who at the beginning of the Christian era were dwelling on the Lower Elbe. They make little appearance in history till the sixth century, when, under their king, Alboin, they entered Italy in April 568, and, with the help of Saxons and others, conquered the northern portion, which hence received the name of Lombardy. Alboin was assassinated in 573 (see *Alboin*), and after some years of great confusion Autharis was recognized in 585 as king. He was a warlike and politic ruler, who gained the good-will of the subject Roman population, and instituted a better system of government than had hitherto existed. He married Theodelinde, a Frankish princess, who began the process of converting the Lombards from Arianism to the orthodox faith. The only king of



LOCH LOMOND

note among the successors of her family was Rothari, who in 643 promulgated a system of laws, which, with subsequent additions, became among German jurists the basis of the study of law during the middle ages. From 713 to 744 the Lombards had a powerful king in the person of Liutprant, who extended his sway, at least temporarily, over the whole of Italy. From that time the power of the Lombards gradually declined, and finally Charlemagne captured Pavia after a six months' siege, and put an end to the Lombard Kingdom (773 or 774), the last monarch being Desiderius.

Lombardy (lom'bär-di), the part of Upper Italy which took its name from the Lombards (see *Lombards*), and which at first extended from the Adriatic to the Savoyan Alps. After the overthrow of the Lombard Empire a number of independent duchies and republics, Mantua, Milan, Venice, Genoa, etc., were gradually formed, originally as fiefs of the Holy Roman Empire, but soon practically independent. On the west side the growth of the house of Savoy ultimately absorbed all minor principalities to the line of the Ticino, while the extension of the Venetian authority during the sixteenth century over the districts to the east restricted the use of the name of Lombardy to the country west of the Lago di Garda and the Mincio, a district which passed under the dominion of Austria in 1706, and was ceded by that power to Italy in 1859. Lombardy is now the name of an Italian department (compartimento), embracing eight provinces (Bergamo, Brescia, Como, Cremona, Mantua, Milan, Pavia and Sondrio), containing an area of 9386 square miles and a pop. of 4,334,099.

Lombok (lom-bok'), an island belonging to the Dutch, in the Indian Archipelago. It lies between Bali on the west and Sumbawa on the east, and has an area of about 3136 square miles. Between the two ranges which traverse the island, one of them rising to the height of 11,500 feet, there is a plain fertile in rice, cotton, maize, coffee and tobacco. There are several active volcanoes. The fauna and flora have strong Australasian affinities, Lombok being east of Wallace's Line. The ruling class are Brahmans, but the mass of the population is Mohammedan. The capital is Mataram on the west coast. Pop. 370,510.

Lombroso (lom-brō'sō), Cæsar, anthropologist, born at Venice in 1836; died in 1909. He held professorships at Pavia, Pasaro and Turin, and became a noted authority on insanity and on crime in its relation to the physical organization. Of his works *L'Homme Criminel* is the most important and unfolds his theory, a congenital tendency to crime. In addition to his works on criminology, he wrote two on pellagra, a disease long prevalent in Italy.

Loménie (lo-mā-nē), Etienne Charles de, Count of Brienne, cardinal, archbishop and minister of state in France, born in 1727; died in 1794. At the first breaking out of the revolutionary discontents in France, Brienne, then archbishop of Toulouse, was among the most active of the reform agitators, and was ultimately entrusted with the finances, in which he failed ignominiously, and was dismissed in 1788. He was arrested by the revolutionary party, and died in prison.—His brother, Athanase Louis Marie, born in 1730, entered the army, became a general, and was made war minister at the same time as his brother was finance minister, retired from office with him, and was guillotined May 10, 1794.

Lomond (lō'mund), Loch, a beautiful lake of Scotland, renowned for its scenery, lying within the counties of Stirling and Dumbarton. Its length is about 24 miles; the breadth at the lower or southern end 7 miles, at the upper end considerably under half a mile. The lake is almost entirely surrounded with hills, one of which, Ben Lomond, is 3192 feet high; and its surface is studded with numerous islands. The greatest depth is in the narrower part of the lake, where in some parts it reaches 600 feet. Fish, including salmon, trout, pike, etc., are abundant.

Lomza (lom'zha), a town of Russian Poland, capital of the government of the same name, on the Nareff, 80 miles N. E. of Warsaw. Pop. 22,428. The government of Lomza covers an area of 4666 square miles, mostly of a flat and fertile soil. Pop. 653,100.

London (lun'dun), the capital of the British Empire and the largest city in the world, is situated in the southeast of England on both sides of the River Thames, which winds through it from west to east. The river is crossed by numerous bridges, and is deep enough to allow large vessels to come up to London Bridge (the lowest of them except the movable Tower Bridge), the stream here being 266 yards wide. It is difficult to assign any exact limits to London on account of its straggling form and numerous suburban extensions; but it may be said to stretch from east to west about 14 miles, from north to south about 10. Its area may be stated at 117 square miles.

The population within this area was 3,816,483 in 1881, 4,536,541 in 1901, and 4,522,961 in 1911. If we consider what is known as Greater London, embracing the City of London Police District, the area is 693 square miles and the population in 1911 was 7,252,963.

General Features.—The greater portion of London lies on the north side of the Thames, in the counties of Middlesex and Essex, mainly the former, on a site gradually rising from the river, and marked by several inequalities of no great height; on the opposite bank, in the County of Surrey and partly in Kent, the more densely built parts cover an extensive and nearly uniform flat. The city proper, or City of London aside from its surrounding boroughs, is a separate municipality, having a civic corporation of its own, at its head being the Lord-mayor of London. It occupies little over one square mile, and has a resident population of 26,923. Westminster, associated with the sovereigns and parliaments for over 800 years, borders with the city on the west: while across the river from the city lies the ancient quarter of Southwark, or 'The Borough.' Besides these, London consists of a great number of quarters or districts, the most important of which now form separate Parliamentary constituencies, though there are many other minor districts, the names of which are also perfectly familiar to the outside world, such as Whitechapel, Spitalfields, Clerkenwell, Pimlico, Bloomsbury, Bermondsey, etc. Another rough division of London is into the West End or fashionable quarter, the residence of the wealthy, and the East End, the great seat of trade and manufactures.

London, on the whole, may be called a well-built city, brick being the material generally employed, though many public and other edifices are built of stone. In some streets the brick fronts are made to imitate stone by being coated with cement. The streets are generally well kept and well paved and lighted, but, except in some of the more recent quarters, the general appearance of London is not attractive, much of the effect of the fine buildings being lost by overcrowding and the want of fitting sites. What generally most strikes a stranger to London is its immense size, which can only be grasped by actually traveling about, or by obtaining a view from some elevation, as Primrose Hill in the northwest, or the dome of St. Paul's Cathedral near the center, the most conspicuous building in the metropolis. Other striking and also attractive features of London are the parks, especially Hyde Park and Regent's Park, so valuable as breathing spaces; and the handsome and massive stone embankments along the Thames, forming wide roadways and promenades bordered by trees for long distances. As the capital of the British Empire London is from time to time the residence of the sovereign and court. It contains the buildings for the accommodation of Parliament and all the great government departments. It is the chief intellectual center of Britain, if not of the world, and is equally great as a center of commerce, banking and finance generally. Many of the institutions and objects of interest noticed in the following paragraphs are also treated in separate articles.

Main Streets, Bridges, etc.—Although in the different districts of London, with the exception of the parts most recently built, there are numerous narrow and crooked streets, yet the whole extent of the metropolis is well united by trunk lines of streets in the principal directions, which render it comparatively easy for a stranger to find his way from one district to another. Piccadilly and Pall Mall; the Strand and its continuation, Fleet street; Oxford street and its continuations, Holborn, Holborn Viaduct and Cheapside, are among noteworthy streets running east and west; while of those running north and south, Regent street, perhaps the handsomest street in London, and the location of fashionable shops, is the chief. The Thames embankment on the north or Middlesex side, known as the Victoria Embankment, also forms a magnificent thoroughfare, adorned by important buildings, and at different points with ornamental grounds and statues. A number of magnificent bridges cross the Thames. The lowest is the Tower Bridge, a 'bascule' bridge opening by machinery so as to let ships pass through. The others most remarkable in upward order (exclusive of railway bridges) are London Bridge, 900 feet long, and built of Aberdeen granite; Southwark Bridge, and Blackfriars' Bridge, all connecting the city with Southwark; Waterloo Bridge, 1380 feet long, consisting of nine elliptical arches of Aberdeen granite; Westminster Bridge, an elegant structure of iron, 1200 feet long, crossing the river from Westminster to Lambeth; the Lambeth and Vauxhall bridges, the Chelsea Suspension Bridge, and the Albert Bridge. The two banks of the river are also united by the Thames Tunnel, a tunnel under the river 2 miles below London Bridge, opened in 1843, and intended for pedestrians, but now traversed by a railway. Of later date are the Blackwall and several other tunnels.

Parks and Squares.—The chief parks are in the western portion of the metropolis, the largest being Hyde Park and Regent's Park, which, together with St. James' Park and the Green Park, are royal parks. The most fashionable is Hyde Park, containing about 400 acres. It is surrounded by a carriage-drive 2½ miles long, has some fine old trees, large stretches of grass, and contains a handsome sheet of water sadly misnamed the Serpentine River. Kensington Gardens (360 acres), with which Hyde Park communicates at several points, are well wooded and finely laid out. St. James' Park, 83 acres, and the Green Park, 71 acres in extent, adjoin Hyde Park on the southeast. Regent's Park, in the northwest of London, north of Hyde Park, containing the gardens of the Zoölogical Society and those of the Royal Botanic Society, covers an area of 470 acres. The Zoölogical Gardens contain the largest collection in the world. There are, besides, Victoria Park in the northeast of London, Battersea Park in the southwest, West Ham Park in the extreme east, Greenwich Park at Greenwich, etc. Of the squares the most central and noteworthy is Trafalgar Square, with Charing Cross adjoining. Some of the squares are planted with fine trees.

Monuments.—Among the public monuments are 'The Monument' on Fish Street Hill, London Bridge, a fluted Doric column 202 feet high, erected in 1677 in commemoration of the great fire of London; the York Column, in Waterloo Place, 124 feet high; the Guards' Memorial (those who fell in the Crimea), same place; the Nelson Column, in Trafalgar Square, 176½ feet high, with four colossal lions by Sir E. Landseer at its base; the national memorial to Prince Albert in Hyde Park, probably one of the finest monuments in Europe, being a Gothic structure 176 feet high, with a colossal statue of the prince seated under a lofty canopy; Cleopatra's Needle on the Thames Embankment; a handsome modern 'cross' at Charing Cross; numerous statues of public men, etc.

Public Buildings.—Among the royal palaces are St. James', a brick building erected by Henry VIII; Buckingham Palace, the Queen's London residence, built by George IV; Marlborough House, the residence of the Prince and Princess of Wales; Kensington Palace, a plain brick building, the birthplace of Queen Victoria. These are all in the west of London. Lambeth Palace, the residence of the Archbishops of Canterbury, is situated on the Surrey side of the river. On the north bank of the Thames stand the Houses of Parliament, a magnificent structure in the Tudor Gothic style, with two lofty towers. The buildings cover about 8 acres, and cost £3,000,000. Westminster Hall, adjacent to the Houses of Parliament, a noble old pile built by William Rufus, was formerly the place in which the Supreme Courts of Justice sat, but is now merely a promenade for members of Parliament. In and near Whitehall in the same quarter are the government offices, comprising the Foreign, Home, Colonial and India Offices, the Horse Guards and Admiralty. Somerset House, which contains some of the public offices, is in the Strand. The post-office in the city occupies two spacious and handsome buildings. Adjoining the city on the east is the Tower, the ancient citadel of London, which occupies an area of 12 acres on the banks of the Thames. The most ancient part is the White Tower, erected about 1078 for William the Conqueror. One of the most important of recent public buildings is the new Law Courts, a Gothic building at the junction of the Strand and Fleet street. Other noteworthy buildings are the Bank of England; the Royal Exchange; the Mansion House, the official residence of the Lord-mayor; the Guildhall, the seat of the municipal government of the city; the four Inns of Court (Inner and Middle Temple, Lincoln's Inn, Gray's Inn); etc.

Churches.—Among the churches the chief is St. Paul's Cathedral, completed in 1710 by Sir Christopher Wren. It is situated in the city, occupies the summit of Ludgate Hill, and is a classic building, 510 feet in length, with a dome 400 feet in height. Westminster Abbey, one of the finest specimens of the pointed style in Great Britain, dates from the reign of Henry III and Edward I. It adjoins the Houses of Parliament, is 531 feet long, including Henry VII's chapel, and 203 feet wide at the transepts. Here the kings and queens of England have been crowned, from Edward the Confessor to Queen Victoria. In the south transept are the tombs and monuments of great poets from Chaucer downwards, whence it is called 'Poets' Corner'; and in other parts are numerous sculptured monuments to sovereigns, statesmen, warriors, philosophers, divines, patriots and eminent individuals generally, many of whom are interred within its walls. Among others of the old churches are St. Bartholomew's in West Smithfield; the Chapel Royal, Savoy; St. Andrew's Undershaft; St. Giles's, Cripplegate; St. Margaret's, Westminster; St. Stephen's, Walbrook; the Temple Church, Bow

TRAFALGAR SQUARE, FROM THE NATIONAL GALLERY, LONDON

The most interesting spot in London. The beautiful shaft commemorates Nelson's victory at Trafalgar.

Church, St. Bride's in Fleet street. The Roman Catholic Cathedral in Westminster and Southwark may also be mentioned.

Places of Amusement.—These are naturally exceedingly numerous. The principal theaters are: Covent Garden and Her Majesty's Theater, the homes of opera; Drury Lane and the Lyceum, identified with the higher drama; the Strand, Criterion, Gaiety and Toole's, well known for farce and burlesque; the Haymarket, Vaudeville, St. James' and Court for comedy; the Adelphi, Princess', and Olympic for melodrama; the Savoy, Avenue, and Comedy for opera-bouffe. The chief musical entertainments are given in St. James' Hall and the Concert Hall at the Sydenham Crystal Palace (see *Crystal Palace*). The Albert Hall, Kensington, capable of holding an audience of 8000 persons, is also used for concerts, etc.

Museums, etc.—Among museums and galleries the principal is the British Museum, the great national collection, in a very central position as regards the rest of the metropolis. It contains an immense collection of books, manuscripts, engravings, drawings, sculptures, coins, etc. (See *British Museum.*) The South Kensington Museum is a capacious series of buildings containing valuable collections in science and the fine and decorative arts, and there is a branch museum from it in Bethnal Green, in the East End. (See *Kensington Museum.*) The natural history department of the British Museum occupies a fine Romanesque building at South Kensington. The India and the Patent Museums are also at South Kensington, and here is being built the Imperial Institute, partly intended as a museum of home and colonial products. The Sloane Museum contains many valuable objects of art, etc. The chief picture-galleries are the National Gallery, in Trafalgar Square, one of the great galleries of the world (see *National Gallery*), the collection in South Kensington Museum, and the National Portrait Gallery. Other museums are the United Service, the Geological, the College of Surgeons, etc. The chief libraries are the British Museum, Lambeth Palace library, the Guildhall library, Sion College library, the London Library, London Institution library, besides large circulating libraries. Many free libraries have recently been established.

Educational and Scientific Institutions.—The chief educational institutions are the Univeristy of London, an examining and degree-conferring body only (see *London, University of*); and University College and King's College, the students of which take their degrees at London University, since London has no university that both teaches and confers degrees. Other institutions are denominational colleges for theology (in some combined with general education); institutions for professional education, as the Royal Naval College, Greenwich; the Royal Military Academy, Woolwich; the Royal School of Mines; the Royal College of Physicians and the Royal College of Surgeons, which grant medical diplomas after examination; the medical schools attached to the various hospitals (see below); Royal Academy of Painting, etc.; Royal Academy of Music; Royal College of Music; Trinity College, chiefly for music; several colleges for women; City and Guilds Institute for Technical Education; the Art Training School, South Kensington. An institution of a unique kind is the People's Palace for East London, opened in 1887, and designed partly for educational and partly for recreative purposes. Of the numerous societies for the promotion of science, art, learning, etc., we need only mention the Royal Society, the oldest, incorporated by Charles II in 1663.

Hospitals, etc.—Among hospitals and charitable institutions the chief are the three great endowed hospitals. St. Bartholomew's Hospital, in West Smithfield; Guy's Hospital, Southwark; and St. Thomas' Hospital, Lambeth, on the Thames Embankment opposite the Houses of Parliament. Other hospitals are St. George's Hospital, Middlesex Hospital, Westminster Hospital, Charing Cross Hospital, King's College Hospital, University College Hospital, St. Mary's Hospital. There are medical schools attached to all the above institutions. Bethlehem Hospital (Bedlam), in St. George's Fields, south of the river, is the chief hospital or asylum for lunatics. The Foundling Hospital, Chelsea Hospital, and Greenwich Hospital are institutions by themselves.

Communications, Trade, etc.—London is supplied with a vast network of surface railways, in addition to a host of cabs and omnibuses, and with underground railways, known as the Metropolitan and Metropolitan District railways, with several lines of electric trackage. Numerous small steamers ply on the Thames, touching at all important points on both sides of the river. All the great railways have termini in London, and their stations correspond with the magnitude of the traffic. The principal markets are Billingsgate for fish; Covent Garden for vegetables, flowers, etc.; Leadenhall for poultry,

game, etc.; Smithfield for dead meat, poultry and fish; the Borough market, Southwark. The manufacturing industries of London, though not to be compared with its commercial importance, are extensive. It contains the largest breweries and distilleries in the kingdom; and sugar refining, manufactures in metal, including plate, jewelry, watches, etc., the making of clothes and of boots and shoes, are extensively carried on. There are large engineering and chemical works. Printing, publishing and journalism have their chief seat here. London has long been the greatest center of commerce in the world, though some other cities, as New York, Liverpool and Hamburg, have come into close competition with it. A most extensive trade by sea is carried on between Britain and the Continent, the East Indies and China, Africa, America and Australia, and there is an immense coasting trade. The docks are very extensive, comprising numerous basins and their accompanying accommodation on both sides of the river below London Bridge, and having a total water area of over 600 acres. London is inferior to Liverpool in the value of its exports, but otherwise considerably surpasses it in trade.

Sanitary Condition, etc.—London is one of the healthiest of the large cities of the world, the annual death rate per 1000 being in recent years about 20.5. The sewerage system is necessarily gigantic, there being altogether about 250 miles of sewers. There is no single system of water supply, the water being furnished by several companies from the Thames, the Lea, and other sources. The chief supply is that brought by the New River Company, established in the time of James I, and obtaining its supplies partly from springs and artesian wells, but mainly from the River Lea at Hertford. These companies have a total capital of about £14,000,000. The water supply at present is barely sufficient, and the quality of the Lea and Thames water is defective. The gas is also supplied by several companies, their capital amounting to about £13,000,000.

Civic Administration.—The City of London proper is governed by a lord-mayor, chosen annually, and by twenty-five aldermen, four sheriffs and two hundred and thirty-two common councilmen. The lord-mayor is elected by the members of the city guilds or companies, known as the liverymen, and numbering about 7000. He receives an allowance of £10,000 a year, which does not usually, however, meet the expenses he incurs. The other districts of London are variously governed. A body known as the Metropolitan Board of Works, created in 1855, took charge of all general improvements, and had the management of all public works in which the taxpayers of the metropolis had a common interest up to 1889, when it was superseded by the London County Council under the Local Government Act of 1888. The administrative County of London comprehends the whole of the metropolitan Parliamentary boroughs, which elect 118 county councilors; there being also 19 aldermen (or a number not to exceed one-sixth of the councilors). The City of London is unaffected by this change, except that its sheriffs are no longer sheriffs of Middlesex, and the right of appointing certain judicial officers is transferred from the corporation to the crown.

History.—In the reign of Claudius (41-54 A.D.) the southern part of Britain was made a Roman province, and London became a Roman station. In the time of Constantine, about 306, the Romans fortified and walled it, and it eventually became a great commercial city. After the withdrawal of the Roman legions, London remained for a considerable time in possession of the Britons, but was at length taken by the Saxon invaders, became the capital of the East Saxons, and under Egbert of Wessex (828-837) had the position of capital for all England south of the Forth. In 851 it was taken by the Danes, but was regained by Alfred in 884. Under Cnut and his son Harold many Danish colonists settled in London, contributed largely to the development of its commerce, and practically made it the capital of England. At the Conquest London submitted to William, and received from him a charter, which is still preserved. It also obtained charters from Henry I, Stephen, Richard I and John. The first mayor was Henry Fitz Alwin, 1189-1212. In 1218 the forest of Middlesex was cleared, and that portion of London north of the city began to be built. In 1285, London having outgrown its water supply, leaden pipes were laid to convey water from Tyburn Brook. In 1349 and 1361 London was visited by the plague. In 1381 much damage was done during Wat Tyler's insurrection. In the fifteenth century some of the principal streets were paved; the plague or sweating sickness raged in several years of this century. In the sixteenth century Westminster was connected with the city by a row of noblemen's mansions along the river, the last of which, Northumberland House, recently made way for the Grand Hotel. St. Bartholomew's Hospital and St. Thomas' Hospital were now founded,

THE TOWER OF LONDON

and theaters began to be an important feature. In the seventeenth century the metropolis was greatly extended. The New River was completed, and many houses were supplied with water; sewers were dug; pavements were laid down for passengers; and hackney-coaches came into general use. But the streets were so narrow and dirty, and the houses in so filthy a state, that the city was scarcely ever exempt from the plague, which sometimes committed great ravages, the great plague, which lasted from December, 1664, to January, 1666, carrying off about 69,000 persons. In 1666 the great fire broke out, and spread over 336 acres, destroying 13,200 houses, ninety churches, and many public buildings. Population and trade now rapidly increased, partly from the immigration of French Protestants driven from their country by the revocation of the Edict of Nantes. In the eighteenth century the metropolis steadily advanced in extent, prosperity and splendor. After the accession of George II in 1727 two new bridges, Blackfriars' and Westminster, were added to the single bridge which at that time spanned the Thames in the metropolis. In the middle of the century the population was about 600,000. In 1759 the British Museum, founded on Sir Hans Sloane's collections purchased by the government, was opened. About this time the houses began to be numbered and the names of streets marked at the corners. In 1781 the Gordon riots took place, when the mob was in possession of London for two days, and committed great havoc. In 1807 gaslight was introduced in the streets. In 1812 the extension of the metropolis about Regent's Park commenced, and an act for the formation of Regent street was obtained in 1813. In 1817 Waterloo Bridge was opened; in 1819 Southwark Bridge. In 1831 new London Bridge was opened. In 1834 the old Houses of Parliament were burned down; the present buildings were begun in 1840. In 1851 the great international exhibition was held in Hyde Park, and led to numerous exhibitions of a similar kind. Since then the history of London has been a story of continued growth and progress, the most notable improvements being the formation of the Thames Embankments, the Holborn Viaduct, and the increasing use of stone in building.

London, a town of Canada, the capital of Middlesex county, Ontario, on the Thames and the Great Western Railway, 121 miles west of Toronto. It was first laid out in 1825, and is well and regularly built, with some handsome public buildings, among which are the city hall, courthouses, Western University, Hellmuth Ladies' College, and other colleges. There are extensive oil-refining works, iron foundries, chemical works, and other manufacturing establishments. It is the center of a fine agricultural region, and carries on an active trade in wheat and agricultural produce. Pop. (1911) 46,300.

London, JACK, novelist, was born at San Francisco in 1876. He went to sea as a common sailor in 1892; tramped through the United States and Canada for sociological study in 1894; served as journalist and lecturer, and was a war correspondent in the Russo-Japanese war. His books and stories have been numerous and are strikingly original in style, dealing with the primitive passions and conditions. Among them are *The Son of the Wolf*, *The People of the Abyss*, *The Call of the Wild*, *White Fang*, *Before Adam* and *The Iron Heel*.

London, UNIVERSITY OF, was originally established as a joint-stock undertaking in 1825. In 1836 two charters were granted, one to a university retaining the name of London University, and having power to examine and grant degrees, another to a teaching body occupying the original premises at Gower street, which took the name of University College, and now prepares students for obtaining the degrees conferred by the university. New and supplementary charters were granted in 1858, 1863 and 1878, the last admitting women to all degrees and prizes granted by the university. The university admits as candidates for examination any person who is above sixteen years of age, and confers degrees in all departments of knowledge except theology. Provincial examinations are carried on simultaneously with the London ones in a number of different towns.

London Clay, the most important of the Eocene tertiary formations of Great Britain, largely developed in the valley of the Thames under and around the metropolis. This formation consists of a bluish or brownish clay containing layers of argillaceous nodular limestone. The shells, fruits, etc., found in the London clay mostly belong to genera now inhabiting warmer seas than those of Britain.

Londonderry (lun'dun-dėr-i), a city and seaport in the north of Ireland, capital of the county of the same name, on the river Foyle, which is here crossed by an iron bridge 1200 feet long. The city stands partly on a hill crowned with the Protestant cathedral, and still retains its old walls, though the buildings now stretch far be-

ST. PAUL'S CATHEDRAL, LONDON
View from Fleet Street.

yond them. There is also a handsome Roman Catholic cathedral. The chief educational institution is Magee College, which gives courses in arts and theology, the latter specially adapted for Presbyterian students. The harbor is commodious, and vessels of large tonnage can discharge at the town. An extensive trade is carried on, linen is manufactured, and there are shirt factories, timber mills, grain mills, foundries, distilleries, etc. Derry took origin in a monastic establishment erected by Columba in 546. The corporation of London, which obtained a grant of the town from James I, fortified it, and gave it the name of Londonderry. Here the Protestants of Ulster took refuge at the Revolution, and made a famous defense against the forces of James II, the siege lasting from April 21 till August 1, 1689. Pop. 38,892. —The COUNTY is bounded on the north by Lough Foyle and the Atlantic Ocean, elsewhere by Tyrone, Lough Neagh and Antrim; area, 816 square miles. It is very diversified in surface, consisting partly of wild and bleak tracts of mountain and moor, partly of flat alluvial lands. The fisheries are important. The staple manufacture is linen. A great part of the county belongs to several London livery companies, having been granted to them by James I in 1609, after the flight of the Earls of Tyrone and O'Donnell. Pop. 144,404.

Londonderry, ROBERT STEWART, SECOND MARQUIS OF, a British statesman, born in County Down in 1769. In 1796 he became Lord Castlereagh, and, being a member of the Irish Parliament, next year he was made keeper of the privy-seal for that kingdom, and the year after chief secretary to the lord-lieutenant. After the Union he sat in Parliament as member for Down, and in 1802 was made president of the Board of Control. In 1805 he was appointed secretary of war and the colonies; but on the death of Pitt he retired until the dissolution of the brief administration of 1806 restored him to the same situation in 1807; and he held his office until the failure of the expedition to Walcheren, advocated by him, and his duel with his colleague, Canning, produced his resignation. In 1812 he became foreign secretary, and he was a member of the Congress of Vienna in 1814. He became very unpopular through his conduct on this occasion and his support of the Holy Alliance; and the responsibilities which he had to assume as virtual prime minister in connection with repressive measures for the protection of order, and the fatigues of an arduous session, seem to have unhinged his mind, leading him to commit suicide in 1822. He had succeeded his father the year before as Marquis of Londonderry.

London Pride (*Saxifrăga umbrōsa*), a perennial evergreen plant of the saxifrage order common in Britain. It has flower-stems 6 to 12 inches high, with small spotted pink flowers.

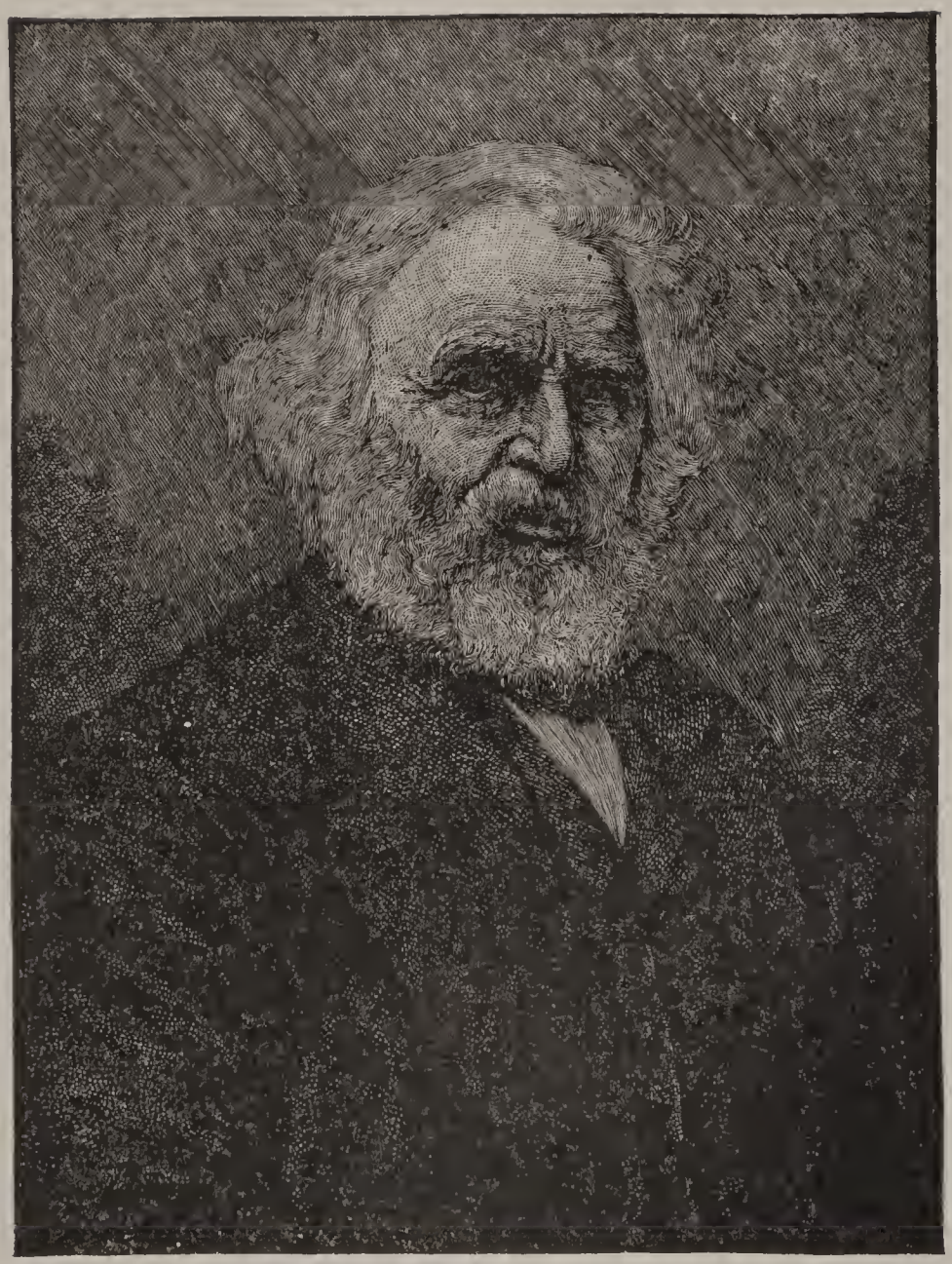
London Purple, an arsenical powder used as an insecticide in plant life.

Long, CHARLES CHAILLÉ, soldier, born at Princess Anne, Maryland, in 1842. He served in the Civil war, attaining the rank of captain. In 1869 he was made a lieutenant-colonel in the Egyptian army; chief of staff to General Gordon in 1874; returned to the United States in 1877 and was admitted to the bar; was appointed consul-general in Corea in 1887; special commissioner to the Paris Exposition in 1900. He is the author of various works of travel, in Africa and other works.

Long, EDWIN, an English artist, born in 1839, who acquired a high reputation as a painter of historical scenes from Eastern history. Among his more important works we may mention *Babylonian Marriage Market* (1875), *An Egyptian Feast* (1877), *Gods and their Makers* (1878), *Esther and Vashti* (1879), and *Callista, the Image Maker* (1887). Mr. Long was successful in portraiture. He was elected a member of the Royal Academy in 1882. Died in 1891.

Long, GEORGE, an English scholar, born in 1800; died in 1879. He was educated at Cambridge, became professor of ancient languages in the University of Virginia in 1824; professor of Greek in the University of London in 1828, but resigned in 1831; professor of Latin at University College in 1842-46; classical lecturer at Brighton College 1849-71. He was one of the founders of the Royal Geographical Society, and did much work in connection with the Society for the Diffusion of Useful Knowledge, including the editing of the *Penny Cyclopædia*. He contributed largely to *Smith's Dictionaries of Greek and Roman Antiquities, Biography and Geography*. Among his works are a translation of *Select Lives from Plutarch* (1844), a *Classical Atlas* (1854), *The Decline of the Roman Republic* (1864-74). He was also general editor of the *Bibliothēca Classica*, to which he contributed a valuable edition of *Cicero's Orations*.

Long, WILLIAM JOSEPH, clergyman, born at North Attleboro, Mas-



HENRY WADSWORTH LONGFELLOW

sachusetts, in 1867. He was ordained to the Congregational ministry in 1899, and is a lecturer and writer on nature and animal life. His books include *Ways of Wood Folk*, *Secrets of the Woods*, *A Little Brother to the Bear*, etc. His descriptions of animal life have been severely criticised by John Burroughs and others.

Long, Loch, a narrow, picturesque arm of the sea, in Scotland, stretching with a slight curve north and northeast from the Firth of Clyde for about 16 miles between the counties of Argyle and Dumbarton.

Longan (lon'gan), an evergreen Eastern tree (*Nephelium Longanum*), a native of the south of China, yielding a delicious fruit. It is of the same genus with the litchi, but its fruit is brown and smaller, being about 1¼ inches in diameter. It is grown to some extent in European hothouses.

Long Beach, a city and summer resort of Los Angeles county, California, on the Pacific coast 20 miles S. of Los Angeles. Pop. 17,809.

Long-boat, a large ship's boat, carvel built, from 32 to 40 feet long, formerly the largest carried by a ship; but it has now generally given place to the launch.

Long-bow. See *Bow.*

Long Branch, a fashionable watering place on the coast of New Jersey, 32 miles south of New York. It has wide avenues with numerous hotels, boarding houses and cottages. The permanent population is 13,298, but during summer is sometimes increased by 60,000 or more.

Longevity (lon-jev'i-ti), a term which is used both for average or probable duration of life in a community, or for great length of life reached by particular individuals. Statistics gathered by life insurance companies indicate that a person at the age of 10 years has an average expectation of living 48.36 years longer; at 20 years 41.49 years longer; at 30 years 34.43 years longer; at 40 years 27.28 years longer; at 50 years 20.18 years longer; at 60 years 13.77 years longer; at 70 years 8.54 years longer; at 80 years 4.78 years longer; at 90 years 2.11 years longer. When the sexes are considered separately the average duration of life is somewhat higher in women than in men. The question of the extreme limit to which human life may possibly attain is also of great interest. Ordinary observation leads to the conclusion that a comparatively small number of men reach the age of 70, a very much diminished number attain to 80, while 90 is rare. There are, however, well-authenticated cases of persons who have reached 100 years, and even a few years more; but such cases as that of Thomas Parr, said to have been 152 years old, and Henry Jenkins, said to have been 169, rest on mere unreliable assertion.

Longfellow (long'fel-lō), Henry Wadsworth, an American poet, was born at Portland, Maine, in 1807; died in 1882. He entered Bowdoin College at fourteen years of age (1821) and was graduated in 1825. While at college he distinguished himself in the study of modern languages, and published some short poems, among which was the *Hymn to the Moravian Nuns.* In 1826 he accepted the professorship of modern languages at Bowdoin, being allowed three years to prepare himself for the post by study and travel in Europe. In 1833 he published a volume of translations from Coplas de Manrique, with an essay on the *Moral and Devotional Poetry of Spain;* in 1835 appeared *Outre Mer*, a volume of prose sketches, and in the same year he was elected to the chair of modern languages and literature in Harvard University. After spending another year in Europe, studying Scandinavian languages and literature, he entered on his professorship in 1836. In 1839 he published *Hyperion, a Romance*, and *Voices of the Night*, a series of poems. *Ballads and other Poems* and a small volume of *Poems on Slavery* appeared in 1842; the *Spanish Student*, a drama in three acts, in 1843; the *Belfry of Bruges* in 1846; *Evangeline* in 1847. In 1845 he published a volume—*The Poets and Poetry of Europe*, containing translations by himself and others, with much valuable information respecting the writers. Among the best-known of his later works are *The Golden Legend, Hiawatha, Courtship of Miles Standish* and *Tales of a Wayside Inn.* He resigned his chair at Harvard in 1854, and subsequently received the degree of LL.D. and D.C.L. from the universities of Cambridge and Oxford. His poems are equally popular on both sides of the Atlantic.

Longford (long'ford), an inland county of Ireland, in the province of Leinster, bounded on the west by the Shannon and Lough Ree; area, 421 square miles. The surface is mostly flat, and bogs are numerous and extensive, especially around Lough Ree and in the west, but a great portion of the south consists of rich soil suitable for growing all kinds of grain and green crops. Grazing and dairy farming are the principal pursuits. By means of the Royal Canal and the Shannon the county has water

communication with Dublin and Limerick. Chief towns, Longford, Granard and Ardagh. Pop. 46,672.—The county town, Longford, stands on the left bank of the Camlin, 70 miles northwest of Dublin. It contains a county courthouse, prison, barracks, corn mills, tan yards, etc. Pop. 3747.

Longicorn Beetles (lon′ji-korn), a family of Coleoptera, including a vast number of

Longicorn Beetle (*Cerambyx heros*).

large and beautiful beetles, all remarkable for the length of their antennæ, which, in the males of some of the species, are several times longer than their bodies. The females deposit their eggs beneath the bark of trees by means of a long, tubular, horny ovipositor and the larvæ are very destructive to wood.

Longinus (lon-jī′nus), Dionysius, or Cassius, a Greek writer, born about A.D. 213, according to some at Athens, according to others at Emesa or Palmyra. He taught criticism, rhetoric and grammar at Athens, visited the East, and became counselor to Zenobia, queen of Palmyra, whom he encouraged to throw off the Roman yoke, for which, after the reconquest of Palmyra, he was put to death by the Emperor Aurelian A.D. 273. Of the many writings of Longinus the treatise *On the Sublime* is the only one extant.

Longirostres (lon′ji-ros-trēz; L. *longus*, long, and *rostrum*, a beak), a group of wading birds (Grallatores), characterized by the possession of long, slender, soft bills, mostly frequenting marshy districts, moors, fens, etc. This group comprises the snipes, woodcock, sandpipers, curlews, ruff, godwit, turnstone, avoset, etc.

Long Island, an island belonging to the State of New York, extending 118 miles in length, and varying from 12 to 23 miles in breadth; area, 1682 square miles. A considerable section of the eastern portion of it, including the large city of Brooklyn, is now included in New York city, while it is connected with Manhattan Island by several large suspension bridges across East River and by tunnels under this river. Long Island Sound separates it from Connecticut. The most fertile portions of the island are carefully cultivated and much produce raised for the New York market. There are many seaside resorts along the coast, including the popular Coney Island.

Long Island, a name sometimes given to the whole of the Outer Hebrides.

Long Island City, in the Borough of Queens, Greater New York, on Long Island, and separated from Brooklyn by Newtown Creek. The city contains extensive warehouses, oil refineries, timber yards, machine shops, manufactures of carpets, etc.

Long Island Sound, an arm of the sea between Long Island and the State of Connecticut, about 115 miles long and generally about 20 miles wide. It is connected with New York Bay by the strait called East River. See *East River*, *Hell Gate*.

Longitude (lon′ji-tūd) in geography, the distance of a place due east or west from a meridian taken as a starting point, this distance being measured along the equator or a parallel of latitude; in other words, it is the angle

between the meridian plane of one place and some fixed meridian plane. Longitudes are generally reckoned from the meridian of Greenwich; the meridians of Paris, Ferro and Washington have been also employed. That of Paris was abandoned in 1911 in favor of the Greenwich meridian. (See *Meridian*.) Since the

parallels of latitude get smaller towards the poles, at which all the meridians converge, it is evident that degrees of longitude which are 69½ statute miles long at the equator, get shorter towards the poles, at which they finally cease to exist. As the earth makes one revolution on its axis, that is, turns through 360° of longitude from west to east, in twenty-four hours, if the sun or a star is on the meridian of any place at a particular time it will be on the meridian of another place 15° west of the first in one hour. Thus 15° of longitude represent one hour of difference in time, and hence longitude may be easily determined by the use of the chronometer set to Greenwich time, which is the method commonly employed at sea. Longitude is reckoned to 180° eastward or westward of the fixed meridian. The latitude and longitude of a place are what enable us to fix its exact position on a map or globe. Celestial longitude is quite analogous to terrestrial.

Longstreet (long'strēt), GENERAL JAMES, an American soldier, born in South Carolina in 1821. He was graduated at the Military Academy in 1842; saw much service on the Mexican frontier, and took a prominent part on the Confederate side during the Civil war, chiefly in connection with General Lee's army. Promoted lieutenant-general, he commanded a corps at the battle of Gettysburg. He was severely wounded in the battle of the Wilderness. After the war he occupied several important positions, including those of Minister to Turkey and U. S. Marshal for Georgia. In 1897 he was made a commissioner of railroads, and died in 1904.

Longton (long'tun), a municipal borough of England, in Staffordshire, 5 miles S. E. of Stoke-upon-Trent. It is a seat of china and earthenware manufacture, and has breweries, malt kilns, brick-works, and in the vicinity collieries and iron mines. Pop. 37,481.

Longus (lon'gus), a Greek novelist, probably of the third century after Christ. He is the author of the pastoral romance of *Daphnis and Chloe.*

Longview, a city, capital of Gregg county, Texas, 24 miles W. of Marshall. It has saw and planing mills, plow and bottling works, cotton-seed oil mills, etc. Pop. 5155.

Longworth (long'wurth), NICHOLAS, horticulturist, was born in Newark, New Jersey, in 1782. In 1803 he removed to Cincinnati. He devoted himself to the cultivation of the grape and strawberry. Kindly but eccentric, he gave much money to those called by him the '*devil's poor.*' His property was estimated at from ten to fifteen million dollars. He died in 1863.

Lonice'ra. See *Honeysuckle.*

Lons-le-Saunier (lo n-lė-sō-nyā), a town of France, capital of the department of the Jura, 45 miles S. W. of Besançon. It has manufactures of spectacles, textiles, etc. Pop. (1906) 10,648.

Loo-Choo, LEW-CHEW, LIU-KIU (Japanese, RIU-KIU), a chain of islands in the Pacific, between Japan and Formosa, and between lat. 24° 10′ and 28° 40′ N.; but the name is sometimes extended also to the group further north, properly known as the Linschoten Islands. The largest island is Okinaw, or Great Loo-Choo (area about 500 sq. miles). Oshima, the island next in size, has an area of 300 sq. miles. The climate is healthy, temperate and favorable for agriculture. The chief products are rice, wheat, maize and batatas; the sugar-cane, cotton, sago, tobacco, indigo, the fig and the banana are also grown. The inhabitants are mainly of race akin to the Japanese, but their manners and civilization are chiefly those of the Chinese. Since 1874 the archipelago has belonged to the Japanese empire. Confucianism is the prevailing religion, but Buddhism has a considerable number of adherents. Pop. 453,550.

Loomis (lö'mis), CHARLES BATTELL, author, born at Brooklyn, New York, in 1861. He became a prolific writer for periodicals, and is the author of numerous sketches, many of them humorous. Of them may be mentioned *The Four-masted Catboat, I've Been Thinking, Poe's 'Raven' in an Elevator, A Holiday Touch, Little Maude,* etc. He died in 1911.

Loomis, ELIAS, physicist, was born in Willington, Connecticut, in 1811. In 1838 he became Prof. of Mathematics and Natural Philosophy in Western Reserve College; in 1844 Prof. of Natural Philosophy in the University of the City of New York; in 1860 Prof. of Natural Philosophy and Astronomy in Yale College. His text-books on the subjects of mathematics, astronomy and the natural sciences have had an immense circulation. He died in 1889.

Lopez (lō'pez), CAPE, a low promontory on the west coast of Africa, in the delta of the River Ogoway, territory of the French colony of Gabun. In 1883 M. de Brazza made it a station and entrepôt.

Lopez, FRANCISCO SOLANO, President of Paraguay, born at Asuncion

in 1827, son of Don Carlos Antonio Lopez, then president. His early education was neglected during the dictatorship of Francia. In his eighteenth year his father made him a brigadier-general in the war against Rosas, the dictator of Buenos Ayres, but he took no actual part in the struggle. He afterwards filled some of the principal offices of state, and was sent to Europe in 1853, accredited to the chief courts there. In 1855 he returned to Paraguay, became minister of war, and on the death of his father, in 1862, President for ten years. He had long been aiming at the foundation of a great inland empire, and as his military preparations were now complete, and his army superior to that of any of the South American States, he took opportunity in 1864 to commence hostilities against Brazil. The Argentine Republic and Uruguay allied themselves with Brazil, and after five years' conflict Lopez was reduced to extremities, and was finally surprised on the banks of the Aquidaban by a troop of Brazilian cavalry and slain, March 1, 1870. The latter part of his career had been stained by many cruelties and wanton murders.

Lophius. See *Angler-Fish.*

Lophobranchii (lof-o-brank'i-ī), the suborder of Teleostean fishes, including the peculiar 'sea-horses' and the 'pipe-fishes.' See *Pipe-fishes* and *Hippocampus.*

Loquat (lō'kwat; *Eriobotrya Japonica*), a Japanese fruit-tree of the nat. order Rosaceæ, and closely allied to the medlars. The fruit is about the size of a large gooseberry, of a fine yellow color. The tree is a beautiful evergreen, whose white flowers have a fragrance like that of hawthorn blossom. It attains a height of from 20 to 30 feet, but when cultivated it is not allowed to exceed 12 feet. It thrives well in Australia.

Lorain (lo-rān'), a city of Lorain county, Ohio, on Lake Erie, 25 miles w. of Cleveland. It has a good harbor; ships grain, coal, iron ore and lumber, and has enormous steel works, extensive ship-works, stove and shovel works, railroad shops, etc. Pop. 28,883.

Loranthaceæ (lor-an-thā'se-ē), a nat. order of exogenous plants, of which the mistletoe is the type, the perianth being often brilliantly colored, all in one piece, or formed of many sepals.

Lorca (lor'kà), a town of Eastern Spain, in the province and 42 miles southwest of Murcia, consists of an old Moorish town on a slope crowned by a castle, and a lower modern town. There are manufactures of coarse woolens, linens, leather, soap and earthenware, and an important annual fair which lasts fourteen days. In the vicinity are lead mines. Pop. 69,836.

Lorcha (lor'chà), a light Chinese sailing vessel, carrying guns, and built after the European model, but rigged like a Chinese junk.

Lord (Anglo-Saxon *hlâford*, for *hlâfweard*, that is bread-keeper), a title of honor or dignity, used in different senses. In the feudal times a lord was the grantor or proprietor of land, who retained the dominium or ultimate property of the land or fee, the use only being granted to the tenant. A person who has the fee of a manor, and consequently the homage of his tenants, is called the *lord of the manor.* Loosely all who are noble by birth or creation, as the peers of Britain, may be called *lords.* The *lords temporal*, in contradistinction to the *lords spiritual*, are the peers who sit together in the House of Lords, as opposed to the bishops who have seats in the house. Lord is sometimes only an official title, as *lord advocate*, *lord mayor*, etc. It is also applied, but only by courtesy, to the sons of dukes and marquises, and to the eldest sons of earls. (See *Address, Forms of.*) In Scotland the judges of the Court of Session prefix the title 'lord' to their surname, or to some territorial designation assumed by themselves. Judges, when on the bench, are addressed as 'My lord' throughout the three kingdoms.

Lord Mayor, the title given to the chief magistrates of London, Dublin and York, during the year for which they hold office.

Lord-Mayor's-Day, the 9th of November, on which a great procession accompanying the newly-elected Lord Mayor of London, from Westminster to Guildhall, takes place. The procession, formerly famous for its historical and allegorical devices, has now much dwindled.

Lords, House of. See *Parliament;* also *Britain.*

Lord's Prayer, a formula of prayer enunciated by Christ on two different occasions, for which see Matt. vi. 5-13, Luke xi. 1-4. Among the earliest Christians it was accepted as the standard form of prayer, and its use in the liturgy is frequently mentioned by the early fathers. The concluding clause of the prayer, known as the doxology, 'For Thine is the kingdom,' etc., is not found in St. Luke's gospel, and even in that of St. Matthew it is only found in some of the later manuscripts, in which it is generally held to be an interpolation.

It is generally retained by Protestants, but is discarded by Roman Catholics.

Lord's Supper, one of the sacraments of the Christian religion: so named because it was instituted by our Saviour when he took his last meal with his disciples, on the occasion of celebrating the Passover. It has also the names of eucharist and communion, and among the Catholics that of the mass or sacrifice of the mass. It has undoubtedly been celebrated, with certain differences, since its institution, and still is celebrated by all sects of Christians except the Quakers, however much their views may differ as to its nature and virtue. The chief controversies regarding the nature of the rite have been chiefly on the question of the 'real presence' of Christ's body and blood and the doctrine of transubstantiation. The doctrine of transubstantiation, first started by Paschasius Radbertus in the ninth century, was soon generally received, and at last was officially approved by the Council of Rome in 1079, and solemnly confirmed in 1215 by the fourth Lateran Council. According to this doctrine the whole substance of the bread and wine is changed into the body and blood of Christ, only the appearance of bread and wine remaining; and the Roman Catholic Church further maintains that Christ is given wholly and entirely both under the form of the bread and under that of the wine. From the doctrine of transubstantiation sprang the adoration of the host (or sacred bread), as well as the custom of refusing the cup in the communion to the laity and non-officiating priests, a practice first authoritatively sanctioned at the Council of Constance, 1415. At the Reformation both the German and Swiss reformers agreed in rejecting the doctrine of transubstantiation and the mass, and maintaining that the Lord's supper ought to be celebrated before the whole congregation, and with the administration of both bread and wine. In explaining the words by which the supper was instituted Luther and Zwingli differed, and their different opinions on this subject formed the principal subject of dissension between the Lutheran and Calvinistic churches. Luther took the words, 'This is my body,' etc., in their literal sense, and thought that the body and blood of Jesus Christ are united, in a mysterious way, with the bread and wine, which, however, remain unchanged, so that the communicant receives, in, with, and under the bread and wine, the real body and blood of the Redeemer. Zwingli, on the other side, understood the words in a figurative sense, and maintained that the Lord's supper was a mere commemoration of the death of Christ, and a profession of belonging to his church. This view is in substance adopted by the Socinians, Arminians and some others. The opinion advanced by Calvin, by which a spiritual presence of the body and blood of Christ is supposed in the communion, by partaking of which the faithful receiver is brought into union with Christ, through the medium of the Holy Ghost, though it came nearer to the Lutheran doctrine than that of Zuinglius did, yet was essentially different. The Greek Church has not adopted the doctrine of transubstantiation in its whole extent; yet her doctrine, which was defined and sanctioned by the Synod of Jerusalem in 1672, comes nearer to this dogma than to that of the Reformed Church. The Anglican Confessions incline more to the view of Zwingli. The 28th Article of the Church of England declares that 'the body of Christ is given, taken, and eaten in the supper only after an heavenly and spiritual manner.' The doctrine adopted by the Presbyterian Church of Scotland in the main agrees with that propounded by Calvin.

Lorelei (lō're-lī), a precipitous cliff on the Rhine, about 450 feet high, half a mile above St. Goar. Legend gives it as the abode of a siren, who by her singing enticed boatmen thither to their destruction.

Lorenzo Marques. See *Delagoa Bay.*

Loretto, or LORE'TO (lo-rā'to), a city of Italy, in the province of Ancona, about 3 miles from the sea. Pop. 7845. The city is a famous resort of pilgrims, who come to visit the *Casa Santa* or Holy House of Loretto, which is said to have been the house of the Holy Family at Nazareth, and to have been miraculously conveyed by the angels first to Fiume in Dalmatia, and afterwards to Loretto. This Holy House, which is in the center of a church built by Majano and Bramante (1464-1587), is covered externally with white marble, is 30 feet long, 15 wide and 18 feet high, and richly ornamented. The number of pilgrims amounts to 50,000 yearly.

Lorient, or L'ORIENT (lo-ri-äṇ), a fortified seaport of France, in the department of Morbihan, at the mouth of the Scorf. It is well built, and has a capacious harbor and extensive docks. Pop. (1906) 40,848.

Lorikeet (lor'i-kēt), the general name of certain small Australian birds belonging to the parrot tribe and forming the genus *Trichoglossus*, remarkable for their extensible tongue, fur-

nished with a pencil at its extremity, by which they are enabled to suck up the nectar of flowers.

Loris (lō′ris), a genus of quadrumanous mammals allied to the lemurs.

Loris-Melikoff (lō′ris-mel′i-kof), MICHAEL TARIELOVITCH TAINOFF, COUNT, a Russian general, born in 1826 at Tiflis; died in 1888. He entered the army in 1843; distinguished himself in the Caucasus in 1847, and at the siege of Kars in 1854; was made lieutenant-general in 1863; commander of the army in Armenia in 1876, and took Kars. In 1878 he was made a count; in 1879 governor-general of Charkow, in which post he suppressed the Nihilistic conspiracies with much vigor. In 1880 he was appointed minister of the interior, in which post he showed a tendency towards measures of a wide remedial kind, and had persuaded the czar, Alexander II, to call a kind of national representative assembly, when the assassination of the latter occurred, March, 1881. On the accession of Alexander III, Loris-Melikoff's position became untenable, and he resigned in 1881.

Lorne (lorn), JOHN GEORGE DOUGLAS SUTHERLAND CAMPBELL, MARQUIS OF, and Duke of Argyll since 1900, was born in 1845, and educated at Eton, St. Andrews University and Cambridge. He represented Argyllshire in the Liberal interest (1868-78), married the Princess Louise, a daughter of Queen Victoria, in 1871, and was governor-general of Canada from 1878 to 1883. He has written several books, tales, etc., among which we may mention *The Book of Psalms*, literally rendered in verse; *A Trip to the Tropics; Guido and Lita, a Tale of the Riviera* (in verse); *Memoirs of Canada and Seotland.*

Lorraine (lō′rān′; German, *Lothringen;* anc. *Lotharingia*). a territory now divided between Germany and France, was originally so named as being the kingdom of Lothaire II. It was afterwards divided into two parts, Upper and Lower Lorraine. The latter, between the Rhine, Meuse and Scheldt, became the duchy of Brabant, and ultimately a part of Belgium. Upper Lorraine, between the Rhine, Saône and Meuse, was for long an independent duchy, but was ceded to France in 1736. The inhabitants, though of German origin, speak the French language, except those of the district between Metz and the Vosges, which was on that account called *German Lorraine.* At the end of the war between France and Germany, in 1870-71, a considerable portion of Lorraine, including the fortresses of Metz and Thionville, was annexed to Germany, and now forms part of the imperial territory of Alsace-Lorraine (which see).

Lorraine, CLAUDE. See *Claude Lorraine.*

Lory (lō′ri), a group of scansorial birds, of the family Psittacidæ or parrots, having broad tails, and dense

Purple-capped Lory (*Lorius domicellus*).

soft plumage, the colors of which are brilliant. They are found in the Eastern Archipelago, also in New Guinea, Borneo and the South Sea Islands. The collared lory is easily taught to speak.

Lossing (los′ing), BENSON JOHN, author, was born in Beekman, New York, in 1813. He was a voluminous writer and annotator, the most important of his works being, *The Pictorial Field-Book of the Revolution, Pictorial History of the Civil War, The Empire State* and *Life of Washington.* He died in 1891.

Los Angeles (lōs an′je-les), a city, the capital of Los Angeles county, California, on the river of the same name, about 15 miles from the Pacific coast. It is the commercial metropolis and the most populous town of Southern California, and has had a phenomenal growth since 1900, when its population was 102,479. It has extensive vineyards, orange and olive plantations, corn-mills, paper-mills, distilleries, iron foundries, and an active commerce. Gold, silver, copper and zinc are found in the neighboring mountains. It is noted for the amenity of its climate and the beauty of its flowering gardens and umbrageous walks, and the excellence of its fruits. Here is the University of Southern California, a State normal school, an art building, and a large public library. It has several parks, Griffith Park covering 3000 acres. Its mild climate has made it a favorite resort for invalids. Pop. 319,198.

Lost Property, strays and waifs excepted, may be re-

tained by the finder with impunity, after proper means have been taken to advertise it; and if it cannot be conveniently preserved without hazard he may dispose of it if not claimed. If, however, the loser can identify his property he has a right to restitution, and a third party purchasing lost property from the finder must restore it to the owner if called upon. There are certain cases in which a jury will construe the retention of lost property into larceny. The finder is not obliged to incur expense in advertising for the owner. In Britain in cases of treasure-trove, *i. e.*, the finding of valuables deposited in the earth, the finder must, under a penalty, give notice to the crown, in which the ownership of all treasure-trove is vested.

Lot (lō), a department in the south of France; area, 2017 sq. miles. The arable land, amounting to a half of the whole, has deep alluvial soils, adapted to wheat, maize, hemp and tobacco; and lighter soils, more suitable for barley, rye and root crops. Vines, the mulberry for silkworms, and plums are extensively grown. Sheep-rearing is an important industry. Corn and other agricultural products are largely exported. The capital is Cahors. Pop. (1906) 216,611.—The river Lot, which gives name to the department, is one of the largest tributaries of the Garonne. Total course, about 250 miles, of which 180 miles are navigable.

Lot-et-Garonne (lō-e-gȧ-ron), a department in the southwest of France; area, 2079 sq. miles. It is intersected by the Garonne and its tributary the Lot, hence the name. More than a half of the department is arable, producing crops of wheat, maize, rye, etc. Other important crops are tobacco and hemp. Prunes and chestnuts are largely exported, and the cork-oak is abundant. There is an active trade in wine, brandy, meal, hemp, resin. Capital, Agen. Pop. (1906) 274,610.

Lothaire (lo-thair′), a name of old German origin, borne by kings of the Franks and early German emperors. See *Louis I.*

Lothian, East. See *Haddington.*

Lothian, Mid. See *Edinburgh.*

Lothian, West. See *Linlithgow.*

Loti (lō-tē), Pierre, pen name of Louis Marie Viaud, born at Rochefort, France, in 1850. He entered the navy, but his descriptions of the conduct of the French soldiers at Hué in 1883 led to his dismissal. He became an active writer, producing vivid and charming pictures of nature, which brought him membership in the French Academy in 1891. Among his books are *Le Marriage de Loti, Madame Crysanthème* and *Le Desert.*

Lotions (lō′shunz), liquid remedies, consisting principally of distilled or filtered soft water, holding in solution various medical substances, and applied externally. Lotions are either cooling, stimulating, astringent, soothing, or sedative.

Lotophagi (lo-tof′a-jī), or lotus-eaters, in ancient Greek legends, the name of a people on the north coast of Africa who lived on the fruit of the lotus tree. According to Homer they received Ulysses and his followers hospitably, but the sweetness of the fruit induced such a feeling of happy languor that they forgot their native land and ceased to desire to return to it, their sole object being to live in delicious dreamy idleness in Lotus-land. See *Lotus.*

Lottery (lot′ėr-i), a scheme for the distribution of prizes by chance, the plan being generally to have a certain number of prizes and a much greater number of tickets, the prizes being allotted according as the drawing of numbered tickets from a suitable receptacle shall decide. Lotteries on the large scale originated in Italy, from which they passed into France. In England the first public lottery occurred in 1569, the proceeds being deveted to public works. In 1612 a lottery was granted in behalf of the Virginia Company. In 1709 the rage for private, and, in many instances, most fraudulent lotteries, was at its height in England, and towards the close of the year an existing act of Parliament was put in force for the suppression of such lotteries as public nuisances. Government lotteries still continued, however, and large sums of money were raised by them; but in 1826 lotteries were entirely abolished in Britain, except in the case of art unions, which are permitted from their supposed good effects in encouraging art. In France the demoralizing influence of lotteries caused their suppression in 1836, with the effect of largely increasing in the following year the deposits in the savings-banks. They are still exceptionally permitted. Lotteries were early instituted in the American colonies and became very popular in the eighteenth century, being commonly resorted to for the purpose of assisting colleges or other public institutions. Efforts to abolish them were made early in the nineteenth century, and they were prohibited in a number of the States before the middle

of the century. The last stronghold of the lottery in this country was in Louisiana, and the charter for this expired in 1893. In 1890 Congress passed a law forbidding the use of the mails for lottery purposes. Lotteries still exist in some parts of Europe, generally in aid of State finances.

Lotus (lō'tus), a name applied to a number of plants different from the lotus famous in Greek legend. One of these is the *Zizyphus Lotus*, a native of Northern Africa and Southern Europe, belonging to the nat. order Rhamnaceæ. It is a shrub 2 or 3 feet high, bearing a fruit, the jujube, which is a drupe of the size of a wild plum. Some think this was the food of the Lotophagi (see *Lotophagi*), though others consider Homer's lotus to have been the date, or the berry of the *Rhamnus Lotus*, a North African shrub, while others again refer it to the agreeable berry of the *Nitraria tridentata*, still greatly prized by the Berbers. The name lotus was also given to several species of water-lily, as the blue water-lily (*Nymphæ cærulĕa*), the Egyptian water-lily (*N. Lotus*), and to the nelumbo (*Nelumbium speciōsum*), which grow in stagnant or slowly running waters. *Nymphæa cærulêa* and *N. Lotus* are often found figured on Egyptian buildings, columns, etc., and the nelumbo, or Hindu and Chinese lotus, bears a prominent part in the mythology of these countries. The name is also given to a genus of plants, nat. order Leguminosæ, consisting of creeping herbs and undershrubs, chiefly natives of temperate regions throughout the world.

Lotze (lot'se), Rudolph Hermann, a German philosopher and physiologist, born at Bautzen in 1817; studied philosophy and medicine at Leipzig; was appointed professor of philosophy at Göttingen in 1844, and was called in 1881 to Berlin, where he died the same year. As a philosopher the standpoint of his system may be described as a teleological idealism, according to which the sufficient ground for all being, and for all that takes place in the universe, is found in the idea of the Good. Among his works are *Metaphysik* (1841), *Universal Pathology* (1842), *Logik* (1843), *On the Idea of Beauty* (1846), *Medical Psychology* (1852), *Microcosmus, Ideas for a History of Nature and Humanity* (1856), and *System of Philosophy* (1874-84).

Loubet (lö-bē), Emile, a French statesman, born at Marsanne in 1839. He became a lawyer and in 1876 was made a member of the French Chamber. He was elected to the Senate in 1885, became premier of France in 1893, was later president of the Senate, and in 1899, on the death of President Faure, was elected President of the French Republic. He held this position until 1906.

Loudon (lō'don), John Claudius, a Scottish horticulturist, born in 1783; died in 1843. He practised landscape gardening in England, and was the author of numerous works, the principal of which are the encyclopædias of *Gardening* (1822), *Of Agriculture* (1824), and *Of Plants* (1829). He edited the *Gardener's Magazine* from 1826 to 1843 and *Loudon's Magazine of Natural History* from 1828 to 1836. The work which he intended to be his greatest, the *Arboretum et Fruticetum Britannicum*, and which was published in 1838 at his own expense, involved him in a debt of £10,000.—His wife, Jane Webb Loudon, was also the author of several popular botanical works, such as *British Wild Flowers* (1846), and *Botany for Ladies* (1849). She died in 1858.

Loughborough (luf'bur-o), a town of England, in the county and 10½ miles N. N. W. of Leicester. It is neatly built, and has a thriving appearance. The principal manufacture consists of hosiery. There are also a famous bell foundry, dyeworks, brickworks, etc. Pop. (1911) 22,992.

Louis I (lö'is; Fr. pron. lö-ē') or as a German name Ludwig, surnamed *Le Débonnaire*, or *the Pious*, the son of Charlemagne, born in 778, succeeded his father in 814 as King of the Franks and Emperor of the West. In 817 he divided his dominions among his three sons, Lothaire, Pepin and Louis. His nephew Bernard, king of Italy, revolted at this division, but was allured by Louis to Châlons, where he was put to death. In 829, in consequence of the urgent solicitations of his second wife, Judith of Bavaria, who had borne him a son, he made a new division of the empire. The result was that the elder brothers revolted and commenced a war, which, with various fortune to the parties chiefly concerned, lasted till the death of the emperor in 840. He was succeeded as emperor by his son Lothaire I; by the treaty of Verdun in 843 his son Charles the Bald obtained the territories from which France as a separate nationality developed; while another son, Louis the German, obtained territories from which the distinctive German nationality developed. See *France, Germany.*

Louis VII, of France (counting from the above Louis I), born in 1120, succeeded his father Louis VI in 1137. He joined the second crusade to Palestine in 1147, but returned two years

afterwards, having suffered many disasters, and lost most of his men. His divorced wife Eleanor married Henry II of England, who thus acquired Guienne and Poitou. He died in 1180, and was succeeded by his son Philip Augustus.

Louis IX (St. Louis), King of France, eldest son of Louis VIII, born in 1215, succeeded to the throne in 1226, but remained some time under the regency of his mother. In the year 1244, when sick of a dangerous disorder, he made a vow to undertake a crusade to Palestine; and in August, 1248, sailed with his wife, his brothers, and 80,000 men to Cyprus, and in the following year proceeded to Egypt. Landing at Damietta, in 1249, he took this city, and afterwards twice defeated the Sultan of Egypt, to whom Palestine was subject. But famine and contagious disorders soon compelled him to retreat; his army was almost entirely destroyed by the Saracens, and himself and his followers were carried into captivity. Not until the year 1254 did Louis return to France, where he employed himself in improving the condition of the people by wise laws. In 1270 he determined to undertake another crusade. He sailed to Africa, besieged Tunis, and took its citadel. But a contagious disorder broke out, to which he himself (1270), together with a great part of his army, fell a sacrifice. In 1297 he was canonized by Boniface VIII.

Louis XI, King of France, eldest son of Charles VII, was born in 1423, and on his father's death in 1461 he assumed the crown. His unscrupulous ambition soon gave rise to a league against him, headed by the dukes of Burgundy, Lorraine and others, but his craft and the promises of concessions which he made, brought about the dissolution of the league. After the death of Charles the Bold of Burgundy before Nancy in 1477, Louis took possession by force of a considerable part of his dominions as vacant fiefs of France, on account of which a war arose between him and Maximilian of Austria, who had married Mary, the daughter of the deceased duke. It was eventually agreed that the dauphin should marry Margaret, daughter of Maximilian, and receive the counties of Artois and Burgundy. In 1481 Louis, who had been twice affected by apoplexy, haunted by the fear of death, shut himself up in his castle of *Plessis-les-Tours*, and gave himself over to superstitious and ascetic practices. He died in 1483. The great object of Louis was the consolidation of France, the establishment of the royal power, and the overthrow of that of the great vassals, and in achieving this end he was very successful, although by most unscrupulous means. He encouraged manufactures and trade, and did much for the good of his kingdom, but was cold-hearted, cruel and suspicious. Louis XI was the first French monarch, who assumed the title of *Most Christian King*, given him by the pope 1469.

Louis XII, King of France from 1498 to 1515, called by his subjects *le Père du Peuple*, was born in 1462. He was the son of Charles, duke of Orleans, grandson of Charles V. He divorced his first wife Jeanne, daughter of Louis XI, and married the widow of Charles VIII, thus uniting the Duchy of Brittany with the crown. In Italy he conquered the Duchy of Milan, took possession of Genoa, and fought with Ferdinand the Catholic for the Kingdom of Naples. Louis took part in the League of Cambray against the Venetians, whom he defeated at Agnadello in 1509. In 1510, however, he had to face the Holy League formed against him by Julius II, Venice, Spain, England and the Swiss; was beaten at Novara by the Swiss in 1513, and by the English at Guinegate, and had to retreat out of Italy. At the age of fifty-three he married a second wife, Mary, the sister of Henry VIII of England, and died about three months afterwards (1515) without male issue. He was succeeded by Francis I.

Louis XIII, King of France, surnamed the *Just*, the son of Henry IV, born in 1601. He ascended the throne (1610) after the murder of his father, his mother (Maria de' Medici) being made guardian of her son and regent of the kingdom. In 1614 Louis was declared of age, and married the year following Anne, daughter of Philip III of Spain. His mother was now exiled from court, and excited a civil war, during which the Huguenots also rose in arms against the king. Louis gave himself up to the guidance of Cardinal Richelieu. A peace was concluded in 1623, but it was not of long continuance. Eventually Rochelle, the headquarters of the Huguenots, was captured (1628), and the revolt, headed by the queen-mother, was broken by the defeat of the insurgents at Castelnaudary (1632). Louis was now induced by Richelieu to take part in the Thirty Years' war, and obtained frequent successes over the Austrians and Spaniards, adding Roussillon, Alsace and the Duchy of Bar to France. He died in 1643.

Louis XIV, King of France, known as *Louis the Great*, son of Louis XIII and Anne of Austria, was born at St. Germain-en-

Laye in 1638, and succeeded his father in 1643. His minority was occupied by the continuation of the wars against Austria; by the victories of Condé—victories crowned by the Treaty of Westphalia; by the struggles of the Parliament against the regent and Mazarin; by the bloody troubles of the Fronde faction; the revolt of Condé, etc. In 1659 peace was con-

Louis XIV.

cluded with Spain, and Louis married Maria Theresa, daughter of Philip IV of Spain. On the death of Mazarin, in 1661, Louis resolved to rule without a minister. He reformed the administration and the taxes, and made the famous Colbert superintendent, who accomplished a series of financial reforms, created the Company of the Indies, made roads, canals, and founded manufactures. In 1662 he purchased Dunkirk for 5,000,000 livres from the needy Charles II. On the death of his father-in-law he claimed Franche-Comté and Flanders, and invaded those territories, Turenne and Condé leading his armies, in 1667. In 1672 he declared war with Holland, and in a few weeks he had conquered three provinces; but the formation of the Grande Alliance between the Emperor, William of Orange, Spain, Denmark, etc., checked his ambition. Still the Treaty of Nimeguen (1678) left Louis in possession of Franche-Comté and a part of Flanders. Louis was now at the height of his glory, and the splendor of his court, adorned by whole groups of great generals, poets, philosophers and notable men, far outshone that of other European courts. Maria Theresa having died in 1683, he secretly married Madame de Maintenon about 1684 or 1685. She is said to have had a considerable part in the revocation of the Edict of Nantes, which drove so many industrious Protestants into exile. (See *Nantes.*) The League of Augsburg was now formed against Louis by Spain, Holland, England, Sweden, etc. A general war continued with frequent and severe losses to the French till the Peace of Ryswick (1697), by which Louis was required to restore all his recent conquests and most of the acquisitions made since the Peace of Nimeguen. The question of the Spanish Succession once more brought Louis into conflict with a united Europe. The principal episodes of the war were the victories of Blenheim, Ramillies and Malplaquet, gained by Marlborough and Prince Eugène. Hostilities were terminated by the Peace of Utrecht in 1713, without altering the relative position of the combatants. Louis died on September 1, 1715, and was succeeded by his great-grandson Louis XV. While the reign of Louis was brilliant in many particulars, it left France impoverished and most of her industries in a languishing condition.

Louis XV, the great-grandson of Louis XIV, was born in 1710; commenced his reign in 1715, but did not actually assume the government himself till 1723. In the interval the country was under the regency of the Duke of Orleans (see *Orleans*), by whose folly, and by the rash financial schemes of John Law (see *Law*), it was brought to the verge of ruin. In 1726 Louis placed his tutor, Cardinal Fleury, at the head of the administration. In 1725 he had married Maria, daughter of Stanislaus Leczynski, the dethroned king of Poland, and in 1733 became involved in a war in support of his father-in-law's claims. After two campaigns he acquired for Stanislaus the Duchy of Lorraine. After the death of Charles VI, in 1740, the war of the Austrian Succession broke out, in which the victories of Count Maurice of Saxony gave new splendor to the French arms; and by the Peace of Aix-la-Chapelle, in 1748, France regained her lost colonies. Louis now began to sink into the grossest indolence and sensuality, abandoning the management of state affairs to Madame de Pompadour, who recklessly squandered the public money. From 1769 he was controlled by Madame du Barry, who is said to have cost the royal treasury in five years 180,000,000 livres. The Seven Years' war (1756-63), in which France was involved, brought severe losses and humiliations to the country, and transferred to Great Britain Canada, Cape Breton, and other territories. Under the auspices of the Duke de

LOUISIANA

Scale of Miles

5 10 20 30 40 50 60 70

Size of type indicates relative importance of places

C.S.HAMMOND & CO., N.Y.

Longitude West from Greenwich

Choiseul the Jesuits were expelled from France in 1764. In 1771 a quarrel between the new prime minister, the Duke d'Aiguillon, and the Parliament induced the king to banish the members of the Parliament from Paris, and soon after to abolish parliaments entirely. Louis died in 1774 of smallpox, leaving a debt of $800,000,000 and a demoralized kingdom.

Louis XVI, King of France, grandson of Louis XV, was born in 1754, and in 1770 married Marie Antoinette of Austria. He ascended the throne in 1774. His moral character was far superior to that of the previous king; but his weakness and want of decision made him very unfit for wielding the scepter of a great country, especially at such a critical period. He could not comprehend the situation of affairs indeed, and had no thought of checking his personal extravagance; while the queen also gave herself up to her love of gaiety, and the festivals of Versailles and Petit Trianon were on a scale of lavish magnificence. At last, in 1789, all the grievances and discontents which had been gathering during a long period of misrule found vent; the populace attacked and destroyed the Bastille; and the revolution was accomplished. In June, 1791, the position of the king had become so perilous that he attempted to escape, but was intercepted at Varennes and forced to return. Among the events which followed were the attack of the populace of Paris on the royal palace, June 20, 1792; the king's arrest in the National Assembly, to which he had fled for refuge; finally, his trial before the convention, where he replied to the charges with dignity and presence of mind. (See *France.*) On January 16, 1793, he was declared guilty of a conspiracy against the freedom of the nation, by a vote of 690 out of 719; on the 17th he was condemned to death, by a majority of only five in 721, and on the 21st he was guillotined.

Louis XVII, titular King of France, second son of Louis XVI, was born in 1785. On the death of his elder brother, in 1789, he became dauphin, was proclaimed king by the royalists on the death of Louis XVI, was soon after separated from his mother, sister and aunt, and delivered (1793) to a shoemaker named Simon, a fierce Jacobin, who, with his wife, treated the young Capet with the most unfeeling barbarity. He survived this treatment only till June 8, 1795, when he died at the age of ten years and two months.

Louis XVIII, King of France, third son of the dauphin, the son of Louis XV, was born in 1755, and died in 1824. At the accession of his brother Louis XVI in 1774 he received the title of Monsieur. He favored the Revolution in its first stages, and secured the extended representation of the Third Estate. He lost his popularity, however, fled from Paris the same night as the king, and by taking another route reached the frontier in safety. After the death of Louis XVI, Monsieur proclaimed his nephew King of France as Louis XVII, and in 1795 he was himself proclaimed by the emigrants King of France and of Navarre. For many years he led a wandering life, supported by foreign courts and by some friends of the house of Bourbon. He at last took refuge in England in 1807, and lived there till the fall of Napoleon opened the way for him to the French throne. He entered Paris in May, 1814, had to flee on Napoleon's escape from Elba, but was replaced on the throne by the Allies after Waterloo. He was weak in character, but gained considerable esteem and affection.

Louisburg (lö'is-burg), a seaport of Cape Breton, province of Nova Scotia, Canada, on the S. E. side of the island. It was strongly fortified under the French; but was taken by the British in 1763, who demolished the fortifications, after which the town fell into ruin. It has a fine harbor with a lighthouse on the east head; is a port of call for steamers, but the inhabitants consist of only a few fishermen. Pop. 1588.

Louis d'Or (lö-ē dor; Fr., 'a Louis of gold'), or simply LOUIS, a gold coin of France, first struck in 1640, in the reign of Louis XIII, and continuing to be coined till 1795. It ranged in value from about $4.00 to $4.50. In 1810 the louis d'or was replaced by the napoleon of 20 francs, and when the coin was again struck under the restoration the same value (20 francs) was retained.

Louisiade Archipelago (lö-ē-ze-ād'), a group of three small islands and a number of islets off the S. E. extremity of New Guinea. They became a British possession in 1885.

Louisiana (lö-ē-zi-an'a), one of the Southern States of the American Union, bounded north by Arkansas, northeast and east by Mississippi, from which it is partly separated by the river of that name, southeast and south by the Gulf of Mexico, and west by Texas, from which it is separated chiefly by the Sabine. It has an area of 48,506 square miles. The surface is generally flat and low; the delta of the Mississippi, and the land along that river, having to

be protected from inundation by levées or artificial embankments. The coast is a low swampy region producing large quantities of rice and sugar-cane; towards the north and northwest, where the highest elevation is reached, the land is less productive, but bears valuable timber. The chief rivers are the Mississippi, which runs for about 600 miles along the border of and through the State; the Red River, which crosses the State diagonally and forms an important avenue of inland commerce; the Washita, Sabine, Pearl, etc., all navigable. There are numerous 'bayous' or secondary outlets of the rivers of much importance for both navigation and drainage purposes, the chief of which are the Atchafayala with its series of lakes, the bayou Teche, bayou de Large, bayou La Fourche and bayou Bœuf. Numerous lakes and lagoons are scattered over the State, mostly land-locked bays and expansions of rivers. The total length of navigable waters is 3782 miles, Louisiana surpassing all other States in length of navigable streams. There are extensive areas, estimated at 16,000,000 acres, of densely wooded forest, pine being the most important lumber tree. The climate is semitropical, and the rainfall heavy along the coast. Coal, iron, sulphur and rock salt are found, the salt of Petit Anse Island excelling in purity the famous Turk's Island salt. Agriculture is the leading pursuit, sugar, rice, cotton and corn being the principal products. Sweet potatoes and tobacco are important crops and early vegetables are grown for the Northern market. The State is well adapted to the raising of live-stock, horses, cattle and swine being abundant. The numerous water courses abound in excellent food fish. Free education is established, and the University of Louisiana, at Baton Rouge, and other institutions are devoted to the higher education. There are about 5200 miles of railroad. The capital is Baton Rouge, but New Orleans is much the largest town. Louisiana was colonized by the French in 1699, and was ceded in 1717 to a chartered company, one of the schemes of the notorious John Law. In 1720 it was resumed by the crown; in 1763 it was ceded by France to Spain; in 1800 re-ceded to France; and in 1803 purchased from France by the United States. It was admitted into the Union in 1812. It has a large number of colored inhabitants. Pop. 1,656,388.

Louisiana, a city of Pike county, Missouri, on the Mississippi River, about 27 miles below Hannibal. It has flour mills, tobacco factories, planing and lumber mills, etc., and ships large quantities of tobacco, wheat, pork, etc. Pop. 4454.

Louis Philippe (lö-e′ fe-lēp), King of the French, born at Paris in 1773; died at Claremont, England, in 1850. He was the eldest son of Duke Louis Philippe Joseph of Orleans, surnamed Egalité (see *Orleans*), and during his father's lifetime he was known as Duke of Chartres. He entered the army in 1791, and favoring the popular cause in the Revolution he took part in the battles of Valmy and Jemappes; was present at the bombardment of Venloo and Maestricht, and distinguished himself at Neerwinden. Dumouriez had formed a scheme for placing him on the throne as a constitutional monarch, and being included in the order of arrest directed against Dumouriez, in 1793, he took refuge within the Austrian territory. For twenty-one years he remained exiled from France, living in various European countries, and in America. He had become Duke of Orleans on the death of his father in 1793, and in 1809 he married the daughter of Ferdinand IV of Naples. After the fall of Napoleon I he returned to France, and was reinstated in his rank and property. At the Revolution of July, 1830, he was made 'lieutenant-general of the kingdom,' and in August became king of the French. He reigned for eighteen years (see *France*), when the Revolution of 1848 drove him from the throne to England, where he remained till his death.

Louis-Quatorze Style (lö-ē-kå-torz), the name given to a style of architecture and internal ornamentation prevalent in France in the reign of Louis XIV, specially applied to palaces and large mansions. Externally the forms are classical, freely treated, and rustication is much employed; the windows are larger and the rooms more lofty and spacious than in buildings of the period immediately preceding, and there is generally an effort at sumptuous elegance. The palace of Versailles and the east front of the Louvre are prominent examples of the style. The most characteristic features of the Louis-Quatorze style, however, are seen in the

Panel in the Louis-Quatorze Style.

internal ornamental decoration, the great medium of which was gilt stucco-work, and its most striking characteristics are an infinite play of light and shade, and a certain disregard of symmetry of parts and of symmetrical arrangement. The characteristic details are the scroll and shell. The classical ornaments, and all the elements of the Cinquecento, from which the Louis-Quatorze proceeded, are admitted under peculiar treatment, or as accessories; the panels are formed by chains of scrolls, the concave and convex alternately; some clothed with an acanthus foliation, others plain. The name *Louis-Quinze* (lö-ē-kaṇz) is given to the variety of this style which prevailed in France during the reign of Louis XV. In it the want of symmetry in the details, and of symmetrical arrangement, which characterize the Louis XIV style, are carried to an extreme. It is crowded with meaningless parts devoid of beauty and expression.

Panel in the Louis-Quinze style.

Louisville (lö′ē-vil or lö′is-vil), a city, county seat of Jefferson county, Kentucky, and the principal city of the State, situated on the south bank of the Ohio, immediately above the falls. It has a river frontage of 8 miles, and is connected with the towns of New Albany and Jeffersonville on the opposite bank of the river, in the State of Indiana, by a bridge 5218 feet long. A canal 2½ miles long carries the river traffic round the falls or rapids. In addition to the large river traffic an enormous trade is carried on by railway, tobacco, whiskey, pork and flour being among the chief articles, and the railroad connections are abundant. Louisville, in fact, is the largest leaf tobacco market in the world, and is one of the greatest whiskey marts, the Kentucky whiskies, largely distilled here, having a wide reputation. The manufactures are also extensive and varied, and pork packing is very important. The principal public buildings are a fine court house, the city hall, the public library, a custom house, besides churches, asylums, and literary and scientic institutions. There are four medical colleges, the University of Louisville, and the Polytechnic Society of Kentucky. There are several attractive parks. An artesian well 2066 feet deep, having a daily flow of 330,000 gallons, forms part of the city waterworks. Pop. 223,928.

Loulé (lō-lā′), a town of Portugal, in Algarve province, 6 miles N. of Faro. It has the ruins of a Moorish castle, and is surrounded by a Moorish wall. Pop. 22,478.

Lourdes (lörd), a French town, dep. of Hautes-Pyrénées, on the Gave de Pau. In 1858 a peasant girl declared that she had been favored with visions of the Virgin Mary in a cave in the neighborhood. Since then pilgrims have flocked to Lourdes, and a church, convent, and other buildings have been erected in connection with the cave. Pop. (1906) 7228.

Lourenco Marquez. See *Delagoa Bay.*

Louse (lous), the common name of a genus (*Pedicŭlus*) of apterous insects, parasitic on man and other animals. The common louse is furnished with a simple eye or ocellus, on each side of a distinctly differentiated head, the under surface of which bears a suctorial mouth. There is little distinction between the thorax and abdomen, but the segments of the former carry three pairs of legs. The legs are short, with short claws or with two opposing hooks, affording a very firm hold. The body is flattened and nearly transparent, composed of eleven or twelve distinct segments. The young pass through no metamorphosis, and their multiplication is extremely rapid. Most, if not all, varieties of mammals are infested by lice, each having generally its own peculiar species, and sometimes having two or three. Three species are said to belong to man, viz. *P. vestimenti* (body louse), *P. capitis* (head louse), and *P. pubis* (crab louse).

Louth (louth), a municipal borough of England, in Lincolnshire, on the Lud, 27 miles E. N. E. of Lincoln, giving name to a parliamentary division. Carpets, soap and candles, agricultural implements, and oil-cake are manufactured. A canal extends to the Humber. Pop. (1911) 9883.

Louth, the smallest county in Ireland, in the province of Leinster, bounded by the Irish Sea and the Counties of Armagh, Monaghan and Meath; length, 28 miles; breadth, 18 miles; comprising 316 square miles. In its coastline are Carlingford Lough, Dundalk Bay, and the estuary of the Boyne. On the north it is rugged and mountainous, but in all other parts level or undulating. The soil is generally fertile, excepting on the elevated tracts. Linen is manu-

factured, and there is also some cotton-spinning. The fisheries are important. Drogheda and Dundalk (the county town) are the principal towns. Pop. 65,820.

Loutherbourg (lö′tėr-börg), or more correctly, LUTHERBURG, PHILIP JAMES, a painter and engraver, born at Strasburg in 1740; died near London in 1812. In 1771 he settled in London, and in 1782 he was an Academician. As a landscape-painter he had deserved celebrity, and he excelled in battle pieces. His etchings were also highly esteemed.

Louvain (lö-vaṇ; Flemish, *Leuven*; German, *Löwen*), a town of Belgium, in the province of Brabant, on the Dyle, 15 miles east by north of Brussels. It forms almost a perfect circle; diameter nearly 2 miles. The area is now too large for the population, and the town contains gardens and cultivated fields. The ramparts have been converted into promenades. Among the more noticeable public buildings are the Hôtel de Ville, one of the richest and most beautiful Gothic buildings in the world; and the church of St. Peter, built at the end of the fourteenth century, an edifice of vast extent, and rich in works of art. Louvain possesses a university, formerly of European reputation, and still attended by 1500 students. The town was formerly the capital of Brabant, and contained 200,000 inhabitants; present pop. 42,194.

Louverture. See *Toussaint-Louverture.*

Louviers (lö-vi-ā), a town in France, in the department of Eure, 17 miles south of Rouen. The staple manufacture is woolen goods and woolen yarn. Pop. (1906) 9449.

Louvois (lö-vwâ), FRANÇOIS MICHEL LETELLIER, MARQUIS DE, minister of war to Louis XIV, son of the Chancellor Letellier, born at Paris in 1641; died in 1691. He obtained the reversion of the office of secretary of war held by his father, and became sole minister of war in 1666. He effected quite a revolution in the art of disciplining, distributing, equipping and provisioning armies, and his administration was brilliant. It was partly by his advice that the Edict of Nantes was revoked in 1685, and the Palatinate was devastated in 1689. His arrogance had long rendered him odious to Louis, and his death was regarded as a relief by his master. Louvois' organization of the army lasted till the Empire; but he also undid the work of Colbert, and destroyed the commerce of France.

Louvre (lö′vr), a dome-turret rising from the roof of a hall or other apartment, formerly open at the sides, but now generally glazed. Louvres were originally intended to allow the smoke to escape when the fire was kindled in the middle of the room. *Louvre window* is the name given to a window in a church tower, partially closed by slabs or sloping boards or bars called *louvre boards* (corrupted into *luffer* or *lever boards*), which are placed across to exclude the rain, while allowing the sound of the bell to pass.

Louvre, Abbot's Kitchen, Glastonbury.

Louvre, the old royal palace at Paris, said to have been a royal residence in the reign of Dagobert, in 628. Francis I erected that part of the palace which is now called the *old Louvre*, and the buildings have been enlarged and adorned by successive kings, particularly Louis XIV. The *new Louvre*, begun by Napoleon I, was completed by Napoleon III in 1857. The whole group of buildings is distinguished by its great extent, and by its elegant and sumptuous architecture. It contains museums of paintings, drawings, engravings, bronze antiques, sculptures, ancient and modern, together with special collections of antiquities, and an ethnographical collection. It was greatly injured by the Communists in May, 1871, the Richelieu pavilion, containing the imperial library of 90,000 volumes and many precious MSS., having been entirely destroyed.

Lovage (luv′ij), a herbaceous, perennial, umbelliferous plant, genus *Ligusticum*, widely distributed throughout temperate regions. *L. offici-*

nāle, common lovage, is sometimes used as an aromatic stimulant. *L. scoticum*, found on the sea-coasts of Scotland, is occasionally used as a pot-herb.

Lovat (luv'at), Simon Frazer, Lord, second son of Thomas Frazer of Beaufort, afterwards twelfth Lord Lovat; born in 1667, beheaded at Tower Hill, London, in 1747. In 1699, on the death of his father, he assumed the title of Lord Lovat, to which on the death of the eleventh Lord Lovat his father had acquired a disputed claim. To secure the estates he effected a forced marriage with the Dowager Lady Lovat, for which he was outlawed and forced to take refuge in France. After a varied life of intriguing, first on the Hanoverian side and next on the Stuart, and a long imprisonment, his title, which had been objected to in various elections, was decided in his favor by the Court of Session in 1730. On the outbreak of the rebellion of 1745, Lovat acted with his usual duplicity, sending his son to fight for the Pretender, while he himself remained at home, protesting his loyalty to the Hanoverian house. This conduct brought him to trial for treason, and resulted in his execution.

Love, Alfred Henry, reformer, born at Philadelphia in 1830. He became a merchant, organized the American Literary Union, was vice-president of the Pennsylvania Prison Society, and in 1866 one of the founders of the Universal Peace Union and became and still remains its president. He has written much on reform subjects and in advocacy of international peace. For many years he has been an official visitor to prisons.

Love Apple. See *Tomato.*

Love-bird, a name given to a genus of birds (*Agapornis* or *Psittaeŭla*) of the parrot family. They are a beautiful group, consisting of very diminutive species, found in America, Africa and Australia. They receive their name from the great attachment shown to each other by the male and female birds. Swindern's love-bird is barely 6 inches in length.

Swindern's Love-bird (*Psittacŭla Swinderniana*).

Love-feast. See *Agape.*

Lovelace (luv'las), Richard, a poet and dramatic writer, son of Sir William Lovelace, of Norwich, where he was born in 1618. He was distinguished by his fidelity to Charles I, in whose interest he expended his whole fortune, and died in poverty in 1658. His poems were light and elegant amatory pieces. He wrote two plays, the *Scholar*, a comedy, and the *Soldier*, a tragedy.

Lover (luv'er), Samuel, novelist, poet and musical composer, was born in Dublin in 1797, and died in 1868. He first devoted his attention to painting, but afterwards turned to literature, and wrote novels, which he illustrated with his own pencil; dramas, operettas and songs, which he set to music. Among his works are *Legends and Stories of Ireland* (1832-34); *Rory O'More*, a novel (1837); *Songs and Ballads* (1839); *Handy Andy*, a novel (1842); *Treasure Trove*, a novel (1844). *The Angels' Whisper*, *Molly Bawn*, and the *Low-backed Car* are among his most popular songs.

Low, Seth, reformer, born at Brooklyn, New York, in 1850. He engaged in mercantile business, and in 1881 was elected mayor of Brooklyn on a reform ticket. He was made president of Columbia University in 1889, and in 1895 erected for that institution a noble library building at a cost of $1,175,000. He ran for mayor of New York in 1897 and was defeated, was elected on a fusion ticket in 1901, but was defeated on a similar ticket in 1903. In 1899 he was on the delegation representing the United States at The Hague International Peace Conference. He is a trustee of the Carnegie Institution at Washington, and a member of various other prominent institutions.

Low Church, a name given to a section of the Church of England whose opinions are opposed to those of the High Church party, and are especially hostile to ritualism and sacerdotalism. See *High Church.*

Low Countries. See *Netherlands.*

Lowe (lō), Sir Hudson, lieutenant-general in the British army; born at Galway in 1769; died in 1844. He entered the army at an early age, and served in various campaigns. In 1813 he was attached to the army of Blücher, and

he took part in the invasion of France the following year. On the fall of Napoleon he was appointed governor of St. Helena, and entrusted with the care of the ex-emperor. He incurred the aversion of Napoleon, and many charges of undue severity were brought against him. Sir Hudson was allowed to die in poverty. His *Letters and Journals* were published in 1852.

Lowe, ROBERT. See *Sherbrooke, Viscount.*

Lowell, a city of Massachusetts, one of the capitals of Middlesex county, on the right bank of the Merrimack, 25 miles N. N. W. from Boston. It is neatly and substantially built of brick, and is chiefly remarkable for being a leading seat of the cotton manufacture, and the largest producer of cotton goods in the United States. There are also extensive bleacheries, large machine shops, paper and chemical works, and many other industries. Its machinery is largely driven by water power supplied by the Merrimack, which here falls 33 feet. Pop. 106,294.

Lowell (lō'el), ABBOTT LAWRENCE, college president, born at Boston, Massachusetts, in 1856. He studied law and practiced at Boston 1880-97, was a lecturer 1897-99, professor of the science of government at Harvard University 1900-03, an Eaton professor 1903-09. On the resignation of President Eliot of Harvard, in 1909, he was elected to succeed him. He is the author of various works, including *Colonial Civil Service, The Government of England, Essays on Government,* etc.

Lowell, JAMES RUSSELL, an American author, born in 1819 at Cambridge, Massachusetts, was graduated from Harvard College in 1838, and from Harvard Law School in 1840. In 1841 he published a small volume of poems entitled *A Year's Life,* and became a regular contributor to various journals, including the *Boston Courier,* in which appeared the first series of the *Biglow Papers,* mainly a satire on slavery and the Mexican war. In 1851 he traveled in Europe, and in 1855 succeeded Longfellow as professor of modern languages and belles-lettres at Harvard. From 1857 to 1862 he wrote many essays for the *Atlantic Monthly,* founded by Holmes, Longfellow, Emerson and himself, and of which he was the first editor. He was joint-editor of the *North American Review* from 1863 to 1872. In 1877 he was appointed American minister at Madrid, and in 1880 he was transferred to London, whence he was recalled in 1885. He was very popular in Britain, was made D.C.L. of Oxford and LL.D. of Cambridge, besides being elected rector of St. Andrews University. Besides his poems, of which numerous editions have been published, and the *Biglow Papers,* his chief works are: *Fable for Critics; Conversations on some of the Old Poets; Among my Books; My Study Windows; Democracy, and other Addresses,* etc. He died in 1891. His first wife, MARIA WHITE LOWELL (1821-1853), was a poet of considerable merit; a volume of her poems was privately printed after her death.

Lower California, a peninsula on the Pacific coast of North America, extending about 750 miles S. of California; area 58,328 square miles; pop. 42,245. It belongs to Mexico and, with the exception of a few spots, is a sterile and unproductive region. Chief towns are La Paz, the capital, Loretto and Rosario.

Lowestoft (lō'stoft), a seaport, municipal borough, and watering place of England, county of Suffolk, occupying the most easterly point of the kingdom. Since the construction of a harbor, piers and docks, Lowestoft has risen to be a thriving and important town, and a chief seat of the fishing industry. The harbor is formed by two piers 1300 feet long. Lowestoft is much frequented for sea-bathing. Pop. (1911) 33,780.

Lowth (lowth), ROBERT, an English prelate, born in 1710; died in 1787. Educated at Winchester School and Oxford University, he was chosen professor of poetry in the latter in 1741. In 1744 he was appointed rector of Ovington in Hampshire. In 1753 he published his lectures on *The Sacred Poetry of the Hebrews,* and became famous as one of the first Biblical critics of his age. Preferments flowed rapidly upon him; and he became successively Bishop of Limerick, prebend of Durham, Bishop of St. David's, of Oxford, and of London. In 1778 he published *Isaiah, a New Translation,* with a preliminary dissertation and notes, which contributed to extend his fame.

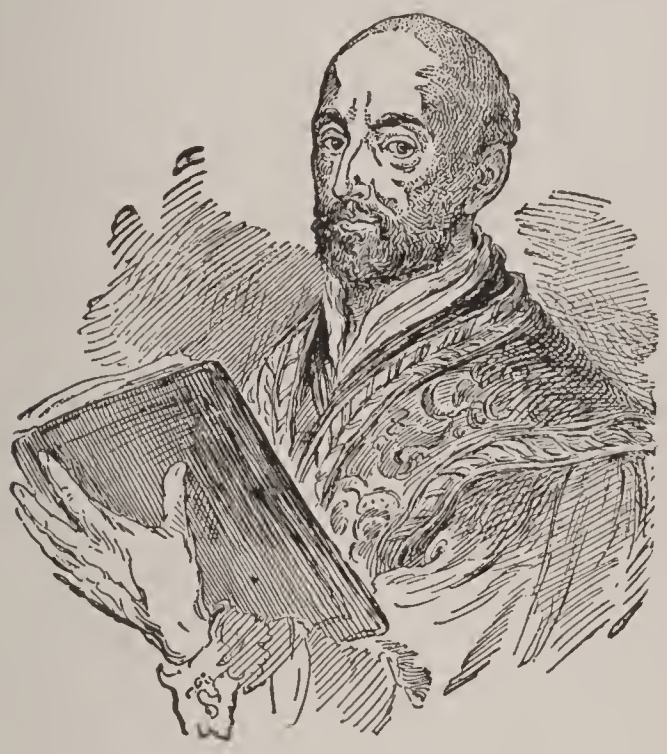
Lowther Hills (lou'*th*êr), a range of Scottish hills extending across the south of Lanarkshire and north of Dumfriesshire to the southern borders of Peebles and Selkirk shires, the highest summits being Green Lowther (2403 feet) and Lowther Hill (2377 feet).

Loxodromic Curve (lok-su-drom'-ik), the path of a ship when her course is directed constantly towards the same point of the compass, in a direction oblique to the equator, so as to cut all the meridians at

equal angles. Mariners usually speak of lines of this kind as *rhumbs*.

Loyalty Islands (loi'al-ti), a group of islands in the Pacific Ocean, immediately east of New Caledonia, of which French colony they are appendages. They consist of the islands Uwea, Lifu and Mari, with many small islands. Total area, 841 square miles. Pop. about 20,000.

Loyola (loi-o'la), IGNATIUS, original name INIGO LOPEZ DE RECALDE, the founder of the order of the Jesuits, was descended of a noble Biscayan family, born at the castle of Loyola,



Ignatius Loyola.

Guipuscoa, in 1491; died in 1556. He was attached in his youth as a page to the court of Ferdinand and Isabella, and trained up in all the vices and frivolities peculiar to his position. When still a young man he entered the army, and during the defense of Pampeluna in 1521 against the French he was severely wounded, and a long and tedious confinement was the result. The only books he found to relieve its tedium were books of devotion and the lives of saints. This course of reading induced a fit of mystical devotion in which he renounced the world, made a formal visit to the shrine of the Virgin at Montserrat, and vowed himself her knight (1522). After his dedication he made a pilgrimage to Rome and Jerusalem, and from 1524 to 1527 attended the schools and universities of Barcelona, Alcala and Salamanca. In 1528 he went to Paris, where he went through a seven years' course of general and theological training. Here in 1534 he formed the first nucleus of the society which afterwards became so famous, François Xavier, professor of philosophy, Lainez, and others having in conjunction with Loyola bound themselves together to devote themselves to the care of the church and the conversion of infidels. Rome ultimately became their headquarters, when Loyola submitted the plans of his new order to Paul III, who, under certain limitations, confirmed it in 1540. (See *Jesuits*.) Loyola continued to reside in Rome and govern the society he had constituted till his death. He was beatified in 1607 by Paul V, and canonized in 1622 by Gregory XV.

Lozère (lo-zār), a department of Southern France, bounded by Haute-Loire, Cantal, Ardèche, Gard and Aveyron; area, 1996 square miles. The department is generally mountainous; highest peak, Mount Lozère, rising 4884 feet. The general character of the department is pastoral, immense numbers of sheep and goats being reared. The rivers Allier, Lot and Tarn rise within the department, which belongs to the basins of the Loire, the Rhône and the Garonne. Neither manufactures nor trade have made much progress. The capital is Mende. Pop. (1906) 128,016.

Lualaba (lö-à-lä'bà), a river in the interior of Southern Africa forming a tributary of the Upper Congo.

Lubbock (lub'ok), SIR JOHN, scientist, was born in London in 1834; joined his father's banking business in 1848, and became a partner in 1856. He entered parliament in 1870 as member for Maidstone; since 1880 he has represented London University. He is a recognized authority on financial and educational questions, and his name is associated with several important public measures, such as the Bank Holiday and Ancient Monuments Acts. He is also distinguished as a man of science, being author of *Prehistoric Times; Origin of Civilization; Origin and Metamorphoses of Insects; Monograph on the Thysanura and Collembola; British Wild Flowers in their Relation to Insects*. He was raised to the peerage as BARON AVEBURY, 1900. His father, SIR JOHN WILLIAM, born in 1803; died in 1865; was a well-known banker, and published several scientific works of considerable value in their day, chiefly relating to astronomy.

Lübeck (lü'bek), one of the free towns of Germany, and a constituent of the German Empire, stands on a low ridge at the confluence of the Wackenitz with the Trave, 38 miles northeast of Hamburg, and 12 miles from

the Gulf of Lübeck, a bay of the Baltic. It was formerly surrounded by walls and bastions, which have been leveled down and converted into pleasant walks; but it is still entered by four gates, and furnishes striking specimens of the architecture of the fifteenth and sixteenth centuries. Among the buildings are the cathedral, a structure of red brick, begun in 1173, surmounted by two spires 416 feet high, and containing a choir-screen regarded as one of the finest specimens of wood-carving in existence; the Marienkirche (St. Mary's Church), a fine specimen of early Gothic; the Ægidienkirche (St. Giles' Church), and the Petrikirche (St. Peter's Church); the town or senate house, an ancient Gothic building; the Hospital of the Holy Ghost (thirteenth century); the Holstein Gate, with its two lofty towers, etc. There is a public library of about 100,000 vols. The manufactures are comparatively unimportant, but the trade is extensive, especially with Hamburg, the Baltic ports, and the interior of Germany. Lübeck possesses a territory of 116 square miles, and includes the port of Travemünde, and several isolated portions in Holstein and Lauenburg. It has a senate of 14 members and a council of burgesses of 120 members. It became an imperial free city in 1226, and about thirty years later it also became the head of the Hanseatic League. (See *Hanse Towns.*) Pop. (1907) 109,265.

Lübke (lüb'kė), WILHELM, art historian, born at Dortmund in Westphalia in 1826; professor of architecture at Berlin in 1857; of art history at Zurich in 1861, at Stuttgart in 1866; called to a similar post at Karlsruhe in 1885. He was the author of a *History of Art*, *History of Sculpture*, etc. He died in 1893.

Lublin (lyö'blyen), a town of Russian Poland, capital of the government of Lublin, 60 miles southeast of Warsaw. It is well built, has manufactures of cloth, candles, soap, etc., and a large trade. Among its notable buildings are the cathedral, dating from the thirteenth century, and the town hall. Pop. 50,152.—The government of Lublin has an area of 6499 square miles. Pop. 1,362,500.

Lubricant (lö'bri-kant), any substance applied to surfaces that work against each other, to diminish friction. Lubricants may be either solid, semi-liquid, or liquid. Plumbago, grease, animal, vegetable and mineral oils, simple or variously compounded, are the substances used.

Luca Giordano (also called *Luca Fa Presto*). See *Giordano.*

Lucan (lö'kan), in full, MARCUS ANNÆUS LUCANUS, a Roman poet, nephew of the philosopher Seneca, born at Corduba, in Spain, about A.D. 38. Lucan went to Rome when a child, and having obtained celebrity at an early age by his talents, excited the jealousy of Nero, who himself aspired to literary honors, and was forbidden by the tyrant to recite in public. This induced Lucan to join the conspiracy of Piso. The plot was discovered, and Lucan died by having his veins opened (A.D. 65). Of his poems only his *Pharsalia*, an unfinished description of the civil war between Cæsar and Pompey, has come down to us. It possesses the highest poetical excellencies disfigured by great faults, which are easily explained by the youth of the author, and the fact that it probably did not receive his final revision.

Lucan, GEORGE CHARLES BINGHAM, EARL OF, born in 1800; died in 1888. He entered the army in 1816; accompanied the Russian army as a volunteer in 1828; succeeded his father 1839; was elected an Irish representative peer in 1840; was commander of a cavalry division in the Crimea, and wounded before Sebastopol. His name is conspicuously associated with the Balaklava charge of the Light Brigade. He was lieutenant-general in 1858; general in 1865; and was also made field-marshal in 1887.

Lucania (lö-kā'ni-a), an ancient division of S. Italy, which extended across from the Tyrrhenian Sea to the Gulf of Tarentum. The Lucanians were a branch of the Samnite nation, and were subdued by the Romans in B.C. 272. Lucania comprised the modern province of Basilicata, the greater part of Principato Citeriore, and the north part of Calabria.

Lucayos. See *Bahamas.*

Lucca (lö'ka), a town of Italy, capital of a province of same name, stands near the left bank of the Serchio, 37 miles N. N. W. Florence. It is well built, with well-preserved fortifications and many interesting churches, including the cathedral of S. Martino. The Palazzo Pubblico, formerly the Ducal Palace, contains a picture gallery. The manufactures consist chiefly of silk goods, woolen cloth and oriental fezes. Pop. 43,566. First an Etruscan, then a Ligurian town, Lucca afterwards became a Roman colony. It subsequently was annexed to the Frankish and German empires, and early in the twelfth century, along with its territory, became a republic. During the middle ages its history is intimately connected with that of Flor-

ence and Pisa. It was occupied by the French in 1799, and together with Piombino was formed into a principality in 1805, and given by Napoleon to his sister Elise. The Congress of Vienna in 1814 erected it into a duchy, and gave it to the Infanta Maria Louisa, duchess of Parma, whose son ceded it to Tuscany. In 1860 it became part of the Kingdom of Italy. The province of Lucca is bounded N. by Massa e Carrara and Modena, E. by Firenze, S. by Pisa, W. by the Mediterranean; area, 577 square miles. It is mountainous in the north, but, on the whole, is better cultivated than most parts of Italy. Silk, oil, corn and fruits are the chief productions. Pop. 319,123.

Lucena (lö-thā′nȧ), a city of Spain, in Andalusia, in the province and 30 miles S. S. E. of Cordova. Pop. 21,284.

Lucera (lö-chā′rȧ; ancient *Luceria*), a town of South Italy, province of Foggia, 11 miles W. N. W. of Foggia. The principal edifices are a cathedral, once a mosque, the castle, an interesting example of a mediæval stronghold, etc. Pop. 17,515.

Lucernaria (lö-ser-nā′ri-a; Latin, *lucerna*, a lamp), the typical example of the Lucernaridæ, an order of the Hydrozoa, nearly allied to the Medusidæ or jelly-fishes. The most familiar member is the *Lucernaria auricŭla*, a little organism somewhat bell-shaped, and which is frequently found adhering by the smaller end to sea-weeds, etc. In the center of the bell-shaped end is an opening into the cavity of the body, which is the stomach. It can detach itself at will and swim freely about by contracting and expanding the bell-shaped disc or 'umbrella,' as it is technically called.

Lucerne, LUZERN (lö-sern′, lö-tsern′), a city of Switzerland, capital of a canton of the same name, beautifully situated on the margin of Lake Lucerne and on the Reuss, where it emerges from the lake. On the land side the town is surrounded by walls and watch towers, and the river is spanned by four bridges, two of which are roofed-in and covered with ancient paintings. The Court Church, Jesuit Church, and the town house are among the most interesting buildings, the latter containing a picture gallery and museum. The 'Lion of Lucerne,' a monument by Thorwaldsen to the Swiss guards who fell in Paris in 1792 while defending the Tuileries, and the glacier-garden, containing relics of the ice period, are objects of interest. Lucerne is one of the three seats of the Swiss Diet, has an important grain market and manufactures of silk and cotton fabrics, and of carriages. Pop. 29,255. The canton is bounded by the cantons of Aargau, Zug, Schwyz, Unterwalden and Bern; area, 587 square miles. The surface is very much broken by ramifications of the Bernese Alps, but none rise above the line of perpetual snow. The Tomlishorn, the culminating point of Mount Pilatus, and of the canton, is 7116 feet above sea-level. The chief rivers are the Reuss, the Aa, Suren, Wigger, etc. Lucerne is well supplied with lakes. Within its own boundaries it has those of Sempach and Baldegg, with many more of smaller size; with Zug it shares the Lake of Zug, and with Unterwalden and Schwyz the Lake of Lucerne. The soil generally is fertile. The pastures are extensive and excellent. German is the language spoken, and the greater part of the inhabitants profess the Roman Catholic religion. Pop. 146,519.

Lucerne, LAKE OF, VIERWALDSTATTER-SEE, or LAKE OF THE FOUR FOREST CANTONS, a Swiss lake bounded by the cantons of Uri, Schwyz, Unterwalden and Lucerne, and noted for its magnificent scenery and historical associations. It is nearly cruciform in shape, the bays of Lucerne, Küssnacht, and Alpnach forming the head and arms while the foot is formed by the Bay of Buochs and lake of Uri. Length from Lucerne to Flüelen 27 miles, from Alpnach to Küssnacht at the extremities of the arms about 14 miles; width from 1 to 3 miles; greatest depth 510 feet.

Lucerne (*Medicāgo*), a genus of leguminous plants containing at least ninety species. The purple medick (*M. satīva*) is a valuable pasture and forage plant extensively cultivated in some of the chalky districts of England and France, and also in America. It is perennial and yields two or more crops in the year. In California it is known by the Spanish name of *Alfalfa*.

Lucia (lö′shi-a), ST., a Christian virgin martyr of Syracuse, who lived in the reign of Diocletian. She is the patroness of the laboring poor, and is invoked for eye disease.

Lucia, ST., BAY OF, an almost landlocked bay on the coast of Zululand, E. South Africa, lat. 28° S.

Lucia, ST., one of the British West India Islands, 21 miles north by east of St. Vincent, and 20 miles south of Martinique; area about 245 square miles. It is of volcanic origin, and has generally an elevated, rugged and mountainous surface. It is very fertile, and has some splendid scenery, but is very unhealthy and infested with venom-

ous serpents and insects. The chief exports are sugar, rum, and cocoa. Castries, the capital, has 7910 inhabitants. Pop. 50,934, of whom about 1000 are white.

Lucian (lö'she-an), a Greek satirist and humorist, who was born at Samosata, on the banks of the Euphrates, and lived between A.D. 120 and 200. Little is known of his life, but he is said to have made money as a rhetorician or a lawyer, to have spent much time in traveling, and to have lived for long intervals in Athens. His works are of a witty and satirical character, the most popular being those known as the *Dialogues*, in which he ridicules the popular mythology and the philosophical sects, particularly his *Dialogues of the Gods* and *Dialogues of the Dead.* He may be regarded as the first of the great humorists.

Lucifer (lö'si-fėr; or in Greek, *Phōsphoros*, both meaning *light-bearer*), a name anciently given to the planet Venus as the morning star. The term is used figuratively by Isaiah (xiv. 12) and applied to the Babylonian king, but it was mistaken by the commentators for a reference to Satan.

Lucifer-match. See *Matches.*

Lucilius (lö-sil'i-us), CAIUS ENNIUS, a Roman knight, grand-uncle to Pompey the Great; born at Suessa B.C. 148; died at Naples about 103 B.C. He is considered the inventor of the Roman satire, because he first gave it the form under which this kind of poetry was carried to perfection by Horace, Juvenal and Persius. Of thirty satires which he wrote only some fragments have been preserved.

Luckenwalde (lųk'en-vål-dė), a town of Prussia, 31 miles south of Berlin. It has cloth manufactories and numerous other industrial establishments. Pop. (1905) 22,263.

Lucknow (luk-now'); more correctly LAKHNAU), a city of Hindustan, capital of Oude, 610 miles W. N. W. of Calcutta, on both banks of the Gumti, here crossed by four bridges, two of which were built by native rulers, and two by the British since 1856. It ranks fourth in size among British Indian cities, being next after Calcutta, Madras and Bombay. It presents a picturesque view from a distance, and has some good streets and interesting edifices. Among the most notable buildings are the Kaisarbagh, a palace built by King Wajid Ali in 1850 at a cost of $4,000,000, now occupied as government offices; the Imâmbarra or mausoleum of Asoof ud Dowlah, now an arsenal and store-houses; the great mosque called the Jamá Masjíd, now a jail; and the Hoseinabad or Small Imâmbarra, with the mausoleum of Mohammed Ali. Lucknow was one of the chief scenes of the Sepoy mutiny. At the beginning of the mutiny the Residency was fortified by Sir Henry Lawrence, and after his death (July 4, 1857) it was closely besieged by the rebels till relief was brought by Havelock and Outram. The relieving force was only a small one, however, and the British were again besieged, partly in the Residency, partly in a walled garden called the Alambágh. In the middle of October Sir Colin Campbell gained possession of the place after severe fighting; but as it seemed impossible to hold it with the troops at his disposal he left Sir James Outram to defend the Alambágh, and removed the civilians, women and children to Cawnpore. At last, in March, 1858, Sir Colin returned with a sufficient force, completely defeated the rebels, and permanently recovered the town. Pop. 264,049.

Lucretia (lö-krē'she-a), in Roman legendary history, a lady of distinguished virtue who was outraged by Sextus, son of Tarquinius Superbus, king of Rome. She stabbed herself, and her death was the signal for a revolution, by which the Tarquins were expelled from Rome and a republic formed.

Lucretius (lö-krē'she-us), CARUS, TITUS, a Roman philosophic poet, born about 98 B.C.; died in 55 B.C. He is said to have died by his own hand, but about his life almost nothing is known. He is admitted to be one of the greatest of Roman poets for descriptive beauty and elevated sentiment. We possess of his composition a didactic poem, in six books, *De Rerum Natura* ('On the Nature of Things'), in which he exhibits the cosmical principles of the Epicurean philosophy. The best English edition of Lucretius is that of H. A. J. Munro, with translation.

Lucullus (lö'kul-us), LUCIUS LICINIUS, a distinguished Roman naval and military commander, born about B.C. 115; died in B.C. 56. He distinguished himself greatly in his various victorious campaigns against Mithridates, king of Pontus, from the time of Sulla to B.C. 66, when he was supplanted by Pompey. He thenceforward lived in luxurious retirement on the coast of Campania. His house was enriched with a valuable library and works of art, which were freely opened to the curious and learned, among whom was his friend Cicero.

Reproduced by permission of The Philadelphia Museums.

AMERICAN LOG LOADER AT WORK IN LOUISIANA

A locomotive crane mounted on a flat car, used for loading logs on cars.

Luddites (lud'īts), a name given to rioters in 1811-16 in Yorkshire, Lancashire and Nottingham, who attributed the prevailing distress to the introduction of machinery. During these years the above counties were in a perpetual state of disturbance, and much damage to machinery was done by the rioters. They took their name from Ned Ludd, a half-witted lad who made himself notorious by destroying stocking frames. After the peace, with the return of prosperity, the riots ceased.

Lüdenscheid (lü'den-shīt), a town of Prussia, province of Westphalia, 21 miles southwest of Arnsberg, with extensive manufactures of metal goods and hardware. Pop. 28,921.

Ludhiana (lụd-hi-ä'na), a town of India, province of Punjab, Sutlej; a great central grain mart. Pop. 48,649.

Ludington (lud'ing-tun), a city of Michigan, capital of Mason county, on Lake Michigan, at mouth of Marquette River. It has a good harbor and a large export trade in lumber, also salt and iron works, canning industries, wood-working shops, etc. Pop. 9132.

Ludlow (lud'lō), a municipal borough of England, in Shropshire, on the river Teme, 27 miles south by east of Shrewsbury. The remains of the ancient castle of Ludlow have an interesting and picturesque appearance. Pop. (1911) 5926.

Ludlow, Edmund, the eldest son of Sir Henry Ludlow, was born about 1620. He served with distinction in the parliamentary army, and succeeded Ireton in the government of Ireland in 1651. He opposed Cromwell's assumption of the protectorate, and agitated in favor of a republic. On the approach of the Restoration he retired to Switzerland, and died in exile 1693. He is the author of valuable *Memoirs*.

Ludlow Rocks, in geology, a portion of the upper Silurian rocks, characteristically developed at Ludlow in Shropshire.

Ludwig, the German form of the name *Lewis, Louis*. See *Louis*.

Ludwigsburg (lụd'vih*s*-bụr*h*), a town of Germany, in Würtemberg, 8 miles north of Stuttgart. It is the second royal residence of the kingdom, and has a large royal palace. Pop. (1905) 23,093.

Ludwigshafen (lụd'vih*s*-hä-vn), a town of Rhenish Bavaria, on the left bank of the Rhine, opposite Manheim, with which it communicates by a railway bridge and steam ferry. It was founded in 1843 by Louis I of Bavaria, and has become a flourishing town with numerous chemical and other works. Pop. (1905) 72,168.

Lufiji. See *Rufiji*.

Lugano (lö-g̃ä'nō), a town of Switzerland, in the canton of Ticino, beautifully situated on the north shore of the lake of same name, 15 miles northwest of Como. Pop. 9394.—The Lake of Lugano, partly in canton Ticino and partly in Italy, between Lakes Como and Maggiore, into the latter of which it discharges itself; is about 20 miles long by 1½ miles broad. Its scenery is of a wild and romantic description.

Lugansk (lö-gansk'), a Russian town, government of Ekaterinoslav, on the Lugan, a branch of the Donetz, 300 miles N. N. W. of Taganrog. It is the chief center of an important coal and iron district. Pop. 34,175.

Lugger (lug'er), a vessel having either two or three masts and a running bowsprit, the masts carrying each

Lugger.

one or two lug-sails. There are also two or three jibs.

Lugo (lö'go), a town of Northern Spain, capital of province of same name, on left bank of the Miño, 46 miles west by south of Santiago. It is surrounded by ancient walls, which now serve as a promenade; has a Gothic cathedral of the twelfth century, several old churches, an episcopal palace, etc. Pop. 26,959.

Lugo, a town of Italy, province of Ravenna, 30 miles S. E. of Ferrara. It has an important annual fair, and a trade in flax, wine, brandy, etc. Pop. (commune) 27,410.

Lugos (lö'gosh), a Hungarian town on the Temes, 32 miles E. S. E. of Temesvar. It is the seat of Greek and

Latin bishops, and has an active trade. Pop. 16,126.

Lug-sail, a quadrilateral sail bent upon a yard which hangs obliquely to the mast.

Lugworm. See *Lobworm.*

Luini (lu̱-ē′nē), Bernardino, a painter of the Lombard school, and the most distinguished pupil of Leonardo da Vinci, was born at Luino, a village on Lake Maggiore, about 1475; died perhaps about 1540. His works both in oil and fresco are much admired. Of the latter, one of the most important is a *Crucifixion* of great size and with various supplementary scenes, on the wall of a chapel at Lugano. He has also some merit as a poet, and is said to have written a treatise on painting. Two of his sons, Evangelista and Aurelio, and a brother named Ambrogio had a reputation as painters.

Luitprand. See *Liutprand.*

Luke (lök), St., the evangelist, author of the Gospel which bears his name and of the *Acts of the Apostles.* He was probably born at Antioch in Syria; was taught the science of medicine, but the tradition that he was also a painter is doubtful. The date of his conversion is uncertain; he is supposed to have been one of the seventy disciples, and also one of the two who journeyed to Emmaus with the risen Saviour. He was for several years a companion of the apostle Paul in his travels, so that in the Acts of the Apostles he relates what he himself had seen and participated in. (See *Acts of the Apostles.*) Luke is apparently mentioned three times in the New Testament: Col. iv, 14; 2 Tim. iv, 11; Philem. 24. He lived to an advanced age, but whether he suffered martyrdom or died a natural death it is impossible to determine. The Gospel of St. Luke was written probably about 58-60. It is addressed to a certain Theophilus, and records various facts connected with the early life of Jesus which were probably furnished to the writer by Mary herself. It is first quoted by the church writers Justin Martyr and the author of the Clementine Homilies, and at the time of Irenæus and Tertullian the gospel in its present form was fully accepted. See *Gospel.*

Luke of Leyden (*Lucas van Leyden*), a Dutch painter and engraver, born at Leyden in 1494; died in 1533. He was an intimate friend of Albert Dürer, and executed many paintings in oil, water-colors, and on glass: likewise a multitude of engravings, which spread his fame widely. The fullest and most beautiful collection of engravings by this master is in the library at Vienna. His paintings are to be met with in many galleries; the principal in Leyden, Vienna, Dresden, Munich and Florence.

Lully (lu-lē), Jean Baptiste, musical composer, born at Florence in 1633; died at Paris in 1687. At ten years of age he became page to Mlle. de Montpensier, niece of Louis XIV. In course of time he became court musician and leader of the king's band. In 1672 he had the direction of the Royal Academy of Music, from which times dates the foundation of the grand opera. He wrote numerous operas, motets, and other compositions, but his fame now chiefly rests on his overtures, a species of composition of which he is said to have been the inventor.

Lully (lö′lē), Raymond (*Doctor Illuminatus*), a distinguished scholastic philosopher, born in Majorca about 1235; died in Algeria in 1315. When about 30 years of age he renounced the world and devoted himself to philosophy and religion. Encouraged by visions, he undertook the task of studying the eastern languages in order to convert the Moslems. For this purpose he made several journeys into Northern Africa, during one of which he was stoned to death. He was canonized in 1419. The number of his works is usually estimated at 300. They include treatises on logic, metaphysics, grammar, theology, casuistry, geometry, astronomy, medicine, etc., and the so-called 'Lullian art.' The *Ars Lulliana*, once extensively taught throughout Europe, consists mainly in categorizing ideas and combining them mechanically, by which means Lully thought to exhaust their possible combinations.

Lumbago (lum-bā′gō; from *lumbus*, the loin), rheumatism or rheumatic pains affecting the lumbar region, and often disabling a person. See *Rheumatism.*

Lumber (lum′bėr), the common term in the United States for timber sawn up for market, including laths, deals, planks, shingles, etc. The lumber industry is fourth among the great industries of the United States, and the heavy demands for timber are rapidly pushing the great lumbering centers toward the South and West, the East and center being largely worked out. In normal years about 40 billion board feet of lumber are produced, valued at about $700,000,000. As a result the great pineries of the Lake States have been almost eliminated, and great inroads are being made

on the supply of timber in all parts of the country. At present the far west State of Washington leads in production, followed by Louisiana, Texas, Mississippi, Wisconsin and Arkansas. The forest lands of the United States are estimated to cover 600,000,000 acres. Yet, great as is the supply, it cannot long continue to meet the enormous demand, especially under the wasteful methods still largely used, and a general system of conservation is imperatively necessary. The railroads make an annual drain on our forest resources of 112,000,000 cords, equivalent to 3¾ billion board feet; 2½ billion feet are used for mine timber, paper manufacture consumes about 3,500,000 cords, and the many other uses of lumber account for the remainder of the annual drain. Among the efforts made to stop this drain is the utilization of the formerly waste products of lumber and the earnest efforts to prevent the frightfully destructive forest fires. In the salvage processes even such material as sawdust is utilized, French cabinet makers having succeeded in converting this, by aid of the hydraulic press and high heat, into a solid substance that may be molded into any shape and receive a high polish.

Luminiferous Ether (lö-min-if'e-rus), a hypothetical medium of extreme tenuity and elasticity, supposed to be diffused throughout all space, as well as among the molecules of which solid bodies are composed, and to be the medium of the transmission of light, heat, and other forms of energy. From the extreme facility with which bodies move about in this medium it might be called a fluid; but the undulations which it serves to propagate are not such as can be propagated by fluids. Its elastic properties are rather those of a solid; and its waves are analogous to the pulses which travel along the wires of a piano rather than to the waves of extension and compression by which sound is propagated through air. Much yet needs to be learned, however, about its true characteristics. See *Undulatory Theory.*

Luminosity. See *Flame* and *Phosphorescence.*

Lummis, Charles F., American author and explorer, born in Lynn, Mass., in 1859, and graduated at Harvard in 1881. After some newspaper work in Ohio, he walked across the continent to Los Angeles. He devoted years to the study of Indian languages and customs and founded the Southwest Archæological Institute of America. His books include *Some Strange Corners of Our Country, The Spanish Pioneers, The Enchanted Burro, Mexico Today,* etc.

Lump-fish, or Sucker (*Cyclopterus lumpus*), an acanthopterygious fish, so named from the clumsiness of its form. The back is arched and sharp, the belly flat, the body covered with numerous bony tubercles, the ventral fins modified into a sucker. Before the spawning season it is of brilliant crimson, orange, purple and blue, but afterwards changes to a dull blue or lead color.

Luna (lö'na), the Latin name for the moon, among the Greeks *Selēnē.* Her worship is said to have been introduced among the Romans in the time of Romulus.

Lunacy (lö'na-si), in law. 'A lunatic,' says Blackstone, 'is one that hath had understanding, but by disease, grief, or other accident hath lost the use of his reason.' In the United States the legislature exercises a protective authority over idiots and lunatics. The statutes of the different States provide that such persons may be put under guardianship; and if a competent judicature have found the fact of lunacy in the prescribed mode, and have appointed a guardian, the fact of lunacy is held to be conclusively proved. Until the contrary has been shown, every person is supposed to be of sound mind. In criminal cases lunatics are not chargeable for their own acts, if committed when laboring under defect of understanding. By the common law, if a man in his lucid mentality commits a capital offense, and before arraignment for it becomes mad, he ought not to be arraigned for it, because he is not able to plead with that caution which he ought to possess. But in general, partial unsoundness will form no defense. See *Lunatic Asylums.*

Lunar Caustic, nitrate of silver. See *Silver.*

Lunar Theory, the mathematical treatment of perturbations in the moon's motion due to the attraction of the sun, the earth and the planets. See *Moon.*

Lunar Year. See *Year.*

Lunatic Asylums, houses established for the treatment of insane persons. Some are established by law, others by the endowments of charitable donors, while others are private establishments. Until near the close of the eighteenth century many lunatics were allowed to wander at large, exposed to all the arbitrary cruelty to which their defenceless condition made them liable, while those who were confined in asylums were in a still worse case. Chains, whipping and confinement in dark dungeons were among the ordinary

discipline of these establishments. The reformation of this unnatural system was begun in France by Philippe Pinel, a benevolent physician; and in England a parliamentary inquiry in 1815 into the barbarities hitherto practiced in lunatic asylums led to a slow but gradual improvement. Lunatic asylums, whether public or private, are now under the control of officers appointed under special statutes, and lunatics must be visited at least once a year by medical and legal visitors. The general conduct of lunatic asylums is now brought more into harmony with humanity and common sense, and with very beneficial results. Violence and undue coercion have been generally abandoned.

Lund (lönd), a town of Sweden, län of Malmö, about 8 miles from the Sound and 24 miles E. of Copenhagen. It is the see of an archbishop, has an ancient cathedral and a university possessed of a library of more than 120,000 volumes. Pop. 16,621.

Lundy Island, a granitic island belonging to England, County Devon, at the entrance of the Bristol Channel, 2½ miles long and 1 broad; area, about 1000 acres, mostly in pasturage. On it is a lighthouse visible for 30 miles.

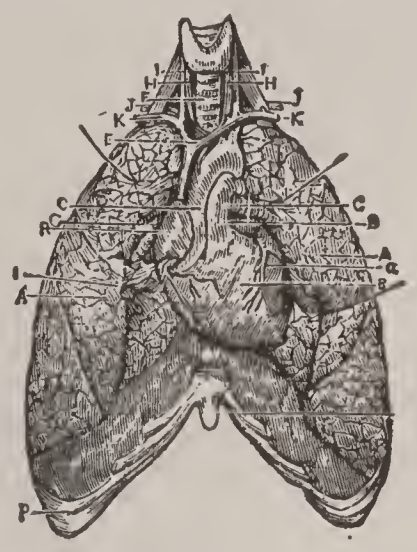
Lüneburg (lü'ne-bu̇r*h*), a town of Prussia, province of Hanover, on the Ilmenau, 28 miles southeast of Hamburg. There are various interesting buildings, including the townhouse, a structure dating in part from the thirteenth century. Near the town are extensive gypsum and lime quarries and a salt mine. Pop. (1905) 26,751.

Lunel (lü-nel), a town of France, department of Hérault, 15 miles E. N. E. Montpellier. Pop. 6712.

Lunette (lö'net), in the art of fortification, a detached outwork having two faces and two flanks. It is often used in field fortifications, or before the glacis of a permanent fortress to protect a weak point.

Lunéville (lü-nā-vēl), a town of Eastern France, department of Meurthe-et-Moselle, near the junction of the Vezouse with the Meurthe, 15 miles E. S. E. Nancy. It has generally straight streets, a palace, built by Leopold, duke of Lorraine, and now partly serving as cavalry barracks; manufactures of gloves, pottery, etc. The treaty of peace in 1801, by which, as a consequence of the battle of Marengo, the Rhine became the French frontier, was signed here. Pop. 19,199.

Lungs, the breathing organs of reptiles, birds, mammals, and in part of amphibians (frogs, newts, etc.), the latter forms breathing in early life by branchiæ or gills, and afterwards partly or entirely by lungs. The essential idea of a lung is that of a sac communicating with the atmosphere by means of a tube, the *trachea* or windpipe, through which air is admitted to the organ, and through structural peculiarities to its intimate parts,



Human Lungs, Heart and Great Vessels.
A, Lungs with the anterior edges turned back to show the heart and bronchi. B, Heart. C. Aorta. D, Pulmonary artery. E, Ascending vena cava. F, Trachea. GG, Bronchi. HH, Carotid arteries. II, Jugular veins. JJ, Subclavian arteries. KK, Subclavian veins. PP, Costal cartilages. Q, Anterior cardiac artery. R, Right auricle.

the air serving to supply oxygen to the blood and to remove carbonic acid. In the mammalia, including man, the lungs are confined to and freely suspended in the cavity of the thorax or chest, which is completely separated from the abdominal cavity by the muscular diaphragm or 'midriff.' In man the lungs are made up of honeycomb-like cells which receive their supply of air through the bronchial tubes. If a bronchial tube is traced it is found to lead into a passage which divides and subdivides, leading off into air-cells. The walls of these air-cells consist of thin, elastic, connective tissue, through which run small blood-vessels in connection with the pulmonary artery and veins. By this arrangement the blood is brought into contact with, and becomes purified by means of the air. The impure blood enters at the root of the lung through the pulmonary artery at the right side of the heart, and passes out purified through the pulmonary veins towards the left side of the heart. Both lungs are inclosed in a delicate membrane called the *pleura*, which forms a kind of double sac that on one side lines the ribs and part of the breast-bone, and on the other side surrounds the lung. Pleurisy arises from inflammation of this membrane. The

lungs are situated one on each side of the heart, the upper part of each fits into the upper corner of the chest, about an inch above the collar-bone, while the base of each rests upon the diaphragm. The right lung is shorter and broader than the left, which extends downwards further by the breadth of a rib. Each lung exhibits a broad division into an upper and lower portion or *lobe*, the division being marked by a deep cleft which runs downwards obliquely to the front of the organ; and in the case of the right lung there is a further division at right angles to the main cleft. Thus the left lung has two, while the right lung has three lobes. These again are divided into *lobules* which measure from ¼ to ½ inch in diameter, and consist of air-cells, blood-vessels, nerves, lymphatic vessels, and the tissue by which the lobules themselves are bound together. The elasticity of the lungs by which they expand and expel the air is due to the contractile tissues found in the bronchial tubes and air-cells, this elasticity being aided by a delicate, elastic, surface tissue. (See *Respiration.*) The lungs are popularly termed 'lights,' because they are the lightest organs in the body, and float when placed in water, except when they are diseased; a characteristic this which is applied in medical jurisprudence as a test whether an infant has respired or not. Among the diseases which affect this organ are pleurisy, pneumonia, pleuro-pneumonia, consumption, etc. See those terms.

Lungwort (lung'wurt), *Pulmonaria officinālis*, nat. order Boraginaceæ, a common garden flower, having red and purple tubular blossoms, and leaves speckled like diseased lungs, hence an old-fashioned remedy in pulmonary diseases. A kind of hawk-week (*Hieracium pulmonarium*) and a lichen (*Sticta pulmonaria*) receive the same name.

Lupercalia (lö-per-ka'li-a), a Roman festival celebrated annually in honor of Lupercus, an ancient pastoral god, afterwards identified with the Arcadian Pan. It was celebrated on February 15, at the Lupercal, a grotto in the Palatine Hill at Rome. Goats were sacrificed, and two youths were arrayed in the skins. With thongs in their hands they ran through the streets of the city striking all persons they met, particularly women, who believed that a blow from the thong prevented sterility.

Lupercus. See *Lupercalia.*

Lupine (lö'pīn; *Lupīnus*), a very extensive genus of hardy annual, perennial, and half-shrubby plants, some of which are cultivated in gardens for the sake of their gaily-colored flowers. They belong to the nat. order Leguminosæ.

Lupulin (lö'pū-lin), the fine yellow powder of hops, which contains the bitter principle. It consists of little round glands, which are found upon the stipules and fruit, and is obtained by drying, heating, and then sifting the hops. It is largely used in medicine.

Lupus (lö'pus), in medicine, a slow, non-contagious tubercular skin affection, occurring especially about the face, and commonly ending in ragged ulcerations of the nose, cheeks, forehead, eyelids and lips. It is also called *Noli me tangere.*

Luray Cavern (lö'rā), a remarkable cavern in the State of Virginia, in the Blue Ridge Mountains, near the village of Luray. It contains many chambers, some of them of striking aspect, and is exceeding rich in stalactite formations. Pop. of Luray village, 1147.

Lurcher (lur'chėr), a dog that lies in wait for game, as hares, rabbits, partridges, etc., drives them into nets, runs them down, or seizes them. This species of dog is said to be descended from the shepherd's dog and the greyhound, and is more used by poachers than sportsmen.

Lurgan (lur'gan), a market town of Ireland, in the County of Armagh and province of Ulster, 20 miles southwest of Belfast. It contains a handsome Episcopal church, a Roman Catholic church, and several other places of worship; a nunnery, a town hall, courthouse, mechanics' institute, tobacco factory, breweries, linen factories, etc. Pop. 11,782.

Luristan (lö-ris-tän'), a mountainous province of Western Persia, with an area of about 20,000 sq. miles. It is named after the Luri, a race divided into many tribes, all migratory and warlike. The only town is Khorrámabad, situated in a fruitful plain south of Hamadan.

Lurlei. See *Lorclei.*

Lusatia (lö-sā'she-a, in German *Lausitz*), an extensive region of Germany, now included partly in Prussia, partly in the kingdom of Saxony.

Luscinia (lus-sin'i-a), a genus of insessorial birds of the thrush family (Turdidæ), to which the nightingale (*L. philomela*) belongs.

Lushai Hills (lö'shā), a wild district on the northeast frontier of India, lying along the southern side of the Assam district of Cachar, the east side of the Bengal district of

Chittagong, and extending on the east into Burmah. This territory is occupied by numerous nomadic tribes called Lushais or Kukis, who, since the expedition of 1871, have been submissive to British rule. They bring down to the markets on the plains, ivory, raw cotton, bees'-wax and caoutchouc.

Lusiads. See *Camoens.*

Lusitania (lū-si-tā′ni-a), the ancient name of a large district in the Iberian peninsula, comprising part of Portugal and part of Spain. The inhabitants, named Lusitani, were brave and warlike in their resistance to the Roman invasion.

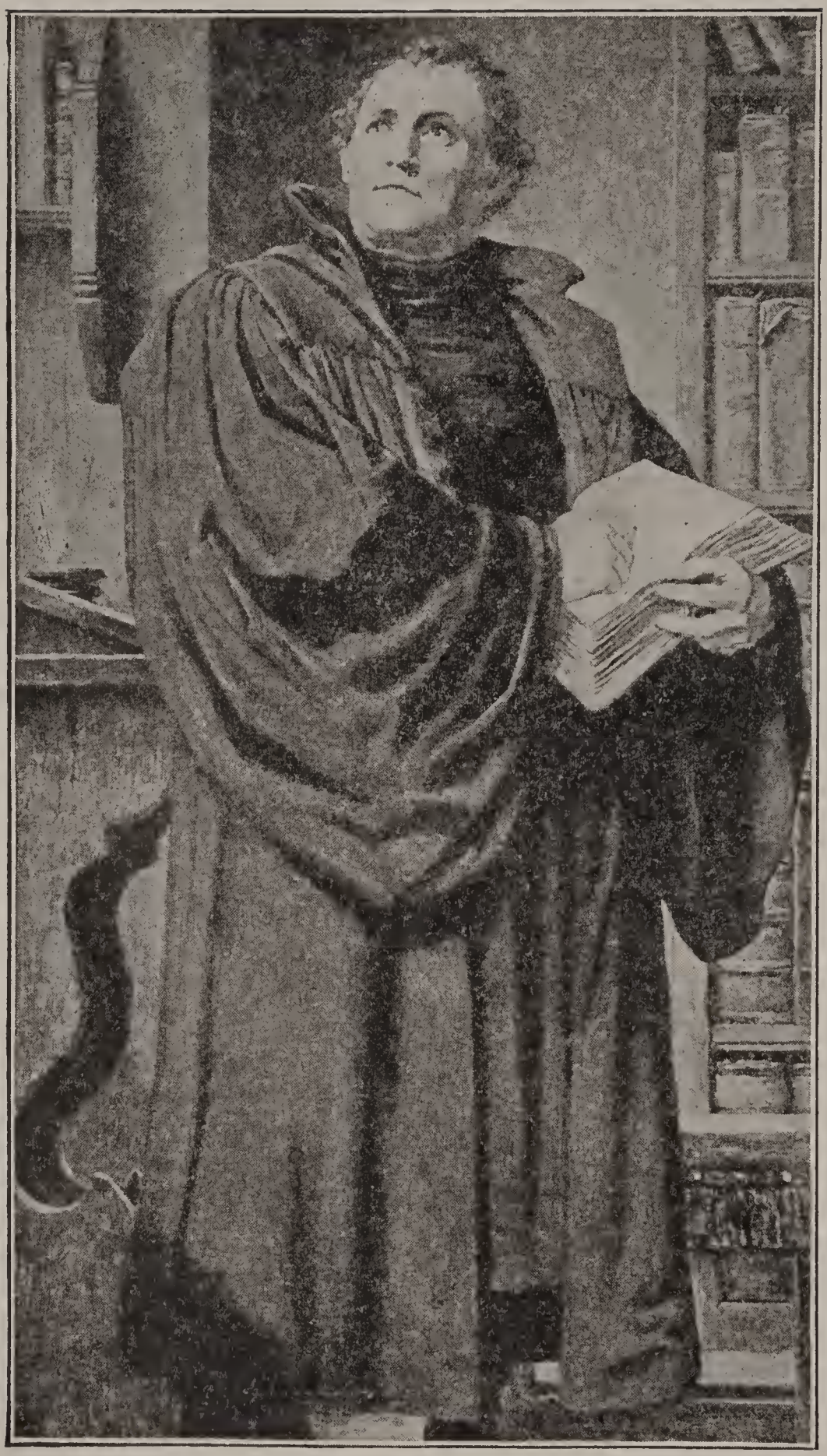
Lustration (lus′tra-shun), purification; in particular the solemn purification or consecration of the Roman people, by means of an expiatory sacrifice. As this lustration took place at the end of every five years *lustrum* came to signify a period of five years.

Lute (löt), a stringed musical instrument of the guitar kind, formerly very popular in Europe. It consists of four parts, viz., the table or belly with a large sound-hole in the middle; the body, ribbed like a melon, having nine or ten ribs or divisions; the neck, which has nine or ten stops or frets which divide the strings into semitones; and the head or cross, in which are fitted the pegs or screws for tuning the strings, of which there are five or six pairs, each pair tuned in octaves or unisons. The strings are struck by the fingers of the right hand and stopped on the frets by those of the left.

Luther (lö′thėr; Ger. pron. lö′tėr), MARTIN, the great religious teacher of Germany, was born at Eisleben in 1483; and died there in 1546. His father, a miner in humble circumstances, soon after his birth removed with his family to Mansfeld, where young Martin was brought up, piously but with some severity. At the age of fourteen he was sent to school at Magdeburg, whence he was sent in 1499 to Eisenach. At school he made rapid progress in Latin and other studies. In 1501 he entered the University of Erfurt; and in 1505 received the degree of Master. About this time, as he afterwards alleged, he discovered in the library a Latin Bible, and found, to his delight, that it contained more than the excerpts in common use. He was destined by his father to the law, but his more intimate acquaintance with the Bible induced him to turn his attention to the study of divinity, with the view of entering monastic life. Contrary to the wishes of his father he entered the monastery of the Augustines at Erfurt in 1505. In 1507 he was consecrated priest, and in 1508, by the influence of his patron, Staupitz, who was provincial of the order, he was made professor of philosophy in the new University of Wittenberg. In 1510 he visited the court of Pope Leo X at Rome on business connected with the order. Returning to Wittenberg he was made a Doctor of Theology in 1512, and here his profound learning and powerful eloquence drew large audiences. At that time he had

Martin Luther.

no controversy with the pope or the church, but the arrival in 1517 of John Tetzel in Wittenberg dispensing indulgences roused the fiery energy of Luther, and caused him to draw up his famous protest in ninety-five propositions, which he nailed to the church door in Wittenberg. In consequence preaching of indulgences ceased, Tetzel fled, and a great religious commotion spread rapidly through Germany. Luther was summoned to Rome to explain his heretical proceedings, but refused to go; nor were the efforts of Cardinal Cajetan able to effect a reconciliation between him and the pope. His dispute with Dr. Eck at Leipzig in 1519, in which he denounced indulgences, and questioned the authority of the pope, was followed in 1520 by a bull of anathema—a document which Luther straightway burned publicly in Wittenberg. This open defiance of Rome required him to vindicate his conduct, which he did in a pamphlet addressed to the Christian nobles of Germany, with the result that many of the mightiest rallied to his aid. When summoned to appear before the German emperor, Charles V, at the Diet of Worms (1521), Luther appeared, acknowledged his writings, made an eloquent defense, but refused to recant. When he retired in triumph from Worms he was met by a friendly troop of soldiers belonging to Frederick the Elector of Saxony, who



MARTIN LUTHER, 1483–1546
The Father of the Reformation.

conveyed him to the castle of Wartburg, where he lay in concealment for nearly a year. Here he employed his time in translating the New Testament into German, but when he heard that disturbances had been excited in Wittenberg on the question of images, he could no longer bear the restraint of inaction. Returning suddenly, and at great danger to himself, Luther succeeded in quieting the people by means of a wise and patient moderation. In 1524 he laid aside his cowl as a priest of the Roman Catholic Church, and in 1525 married Catharina von Bora, one of nine nuns who had renounced their religious vows under his teaching. The wisdom of this marriage was doubted by his friends, but his home life and the birth of six children, contributed greatly to the happiness of the reformer. From the year 1521 Luther had been busy translating the Bible into German with the aid of Melanchthon and others, and the great task was completed in 1534. This important work, taken in connection with the *Protestant Confession* made at Augsburg in 1530, served to establish the reformer's doctrines in Germany, and closed the important part of his public life. He continued, however, till the end his private work of teaching, preaching and writing. The massive character of the German reformer lay along simple lines, and found its full and direct expression in his work. He lacked the learning of Calvin, and the balanced judgment of Melanchthon, but a vivid practical insight enabled him to mark the path that would lead to the success of his movement for the reforms he sought. Behind all the reformer's zeal he had much lowly human sympathy, humor, tenderness and a love of homely things. This side of his character is most clearly seen in his *Letters* and *Table-Talk*. His German writings were varied and extensive.

Lutherans (lö'ther-anz), the adherents of Luther, a term now applied to one of the great sections into which the Protestant Church on the continent of Europe is divided, the other being known as the Reformed or Calvinists. The doctrinal system of the Lutheran Church is contained in the *Augsburg Confession* (which see), and other documents, including the two catechisms of Luther. The fundamental doctrine is that we are justified before God, not through any merits of our own, but through faith in His Son. The ordinances of Baptism and the Lord's Supper are held by Lutherans to be not mere signs or memorials, but channels of grace. They believe that 'in the Holy Supper there are present with the elements and are received sacramentally and supernaturally the body and blood of the Lord Jesus Christ,' but reject transubstantiation and consubstantiation. They observe the various festivals of the Christian year, and have a liturgical form of worship. The Lutheran is the established religion of Sweden, Norway and Denmark. In Europe there are over 50,000,000 members; in the United States over 2,000,000 members.

Luton (lö'tun), a municipal borough of England, County of Bedford, on the river Lea. It has large manufactories of straw hats and bonnets, it being the chi f seat of the straw-plaiting industry in England. Pop. (1911) 50,000.

Lüttringhausen (lüt'ring-hou-zn), a town of Rhenish Prussia, in the government of Düsseldorf, with manufactures of woolens, cottons, etc. Pop. (1905) 11,829.

Lützen (lüt'zn), a small town of Prussian Saxony, in the government of Merseburg. Pop. 3981. Two important battles have been fought in its neighborhood. The first took place on November 16, 1632, between the Swedish army under Gustavus Adolphus, and the imperialists under Wallenstein, the former being victorious. The second was fought May 2, 1813, between the allied Russian and Prussian armies and the French under Napoleon, who maintained his position, though at a loss of 12,000 men, against 10,000 of the allies.

Luxation (luks-a'shun), in surgery, the displacement of a bone, a dislocation.

Luxembourg (lük-sàṇ-bör), FRANÇOIS HENRI DE MONTMORENCY-BOUTEVILLE, DUKE OF, Marshal of France, born in 1628; died in 1695. He served when young under the Prince of Condé; was made a duke and peer of France; and, having gained the battle of Senef in 1674, a marshal of France. In the war of France against England, Holland, Spain and Germany he won the three great battles of Fleurus (July 1, 1690), Steenkerken (Aug. 3, 1692), and Neerwinden (July 29, 1693).

Luxemburg, GRAND-DUCHY OF, a territory connected with the Dutch crown, bounded north and east by Rhenish Prussia, south by France, and west by Belgium; greatest length, north to south, 55 miles; greatest breadth, 34 miles; area, 998 square miles. It forms part of the plateau of the Ardennes, and its drainage belongs almost entirely to the basin of the Moselle. Grain and other crops are raised; cattle and horses are exported; iron ore is mined and smelted. The inhabitants are mostly of

German origin, but French is the language of the educated classes and of business. The people are for the most part Roman Catholics. The King of Holland is Grand-duke of Luxemburg, which is governed according to its own constitution. In the treaty of London (1867) it was declared to be neutral territory. Pop. 246,455. Luxemburg, in early times, was much more extensive than at present. It was converted into a grand-duchy in 1814, and given to the King of Holland. In 1830 part of it became a Belgian province (area 1706 square miles). The remainder, continuing with the Dutch, formed the present grand-duchy. In 1890 the connection of Luxemburg with the Netherlands was severed. It is included in the German Zollverein.

Luxemburg, the capital of the above grand-duchy, 117 miles southeast of Brussels, is bounded on two sides by a ravine about 200 feet deep, and is approached by a long and lofty viaduct. It was formerly one of the strongest fortresses in Europe, but its defences were dismantled in accordance with the treaty of London (1867). The town is well built; and contains town houses, old and new; the government house, house of deputies, town library, the old abbey cathedral, etc. Pop. (1905) 20,984.

Luxor (luks'or), a village of Upper Egypt, on the right bank of the Nile, about 2 miles south of Karnak. It contains a splendid ancient temple, and is the headquarters from which visitors set out for the extensive remains of ancient Thebes.

Luynes (lü-ēn), CHARLES D'ALBERT, DUKE DE, favorite and premier of Louis XIII and Constable of France, born in 1578. He caused the exile of the king's mother, and for a short time had absolute control in the government. He died in 1621, without having experienced any visible loss of favor or influence.

Luzerne (lö-zurn'), a borough in Luzerne County, Pennsylvania, 5 miles N. of Wilkes-Barre. It has drill factories, flour and feed mills, etc. Pop. 5426.

Luzon (lö-thon'), formerly a Spanish island, the largest of the Philippines. Its greatest length is about 540 miles; its greatest breadth about 125 miles; area estimated at 57,500 square miles. Two great mountain chains, the Sierra Madre and Cordillera de Caravallos, run north and south, and rise to a height in some cases of more than 7000 feet. They are of volcanic origin, and many disastrous eruptions have taken place. Rivers and lakes are numerous. Vegetation is luxuriant, and the vast forests contain ebony, cedar, and other valuable trees. Luzon also produces abundant crops of rice, sugar-cane, Manila hemp, tobacco, coffee, ginger and pepper. There are few wild animals except the buffalo, which is also domesticated; but oxen, sheep and swine are reared. The population consists of the aboriginal Negritos, and of Malays, Chinese, Spaniards, Americans, etc., the whole amounting to 3,708,350. The capital is Manila. Luzon, with the other Philippine Islands, was transferred to the United States by the peace with Spain of 1898. It is rapidly developing under American rule.

Lycanthropy (lī-kan'thrō-pi; Greek *lykos*, a wolf, and *anthrōpos*, a man), a kind of erratic melancholy or madness in which the patient imagines himself to be a wolf and acts in conformity with his delusion. Great numbers were attacked with this disease in the Jura in 1600. They herded together, and emulated the habits of the wolf.

Lycaonia (lī-ka-ō'ni-a), a small district in Asia Minor, situated between Galatia, Cappadocia and Isauria, of which the capital was Iconium. It was visited by Paul and Barnabas in their earliest missionary journey, as described in Acts, xiv.

Lyceum (lī-sē'um), an academy at Athens in which Aristotle explained his philosophy. In modern times the name of *lyceum* has been given to the schools intended to prepare young men for the universities.

Lych-gate. See *Lich-gate.*

Lychnis (lik'nis), a genus of usually erect, annual, biennial, and perennial herbs, belonging to the nat. order Caryophyllaceæ, or pinks. Some of them bear beautiful flowers. The scarlet lychnis, ragged robin, rose campion and corn-cockle are well known.

Lycia (lish'e-a), an ancient maritime province in the south of Asia Minor, bounded by Caria on the west, Pamphylia on the east, and Pisidia on the north. It was colonized by the Greeks at a very early period, and its historical inhabitants were Greeks, though with a mixture of aboriginal blood.

Lycoperdon (lī-ku-per'dun), a genus of fungi, commonly called *puff-balls*. In a young state they are edible.

Lycophron (līk'o-fron), born at Chalcis, in Eubœa, a Grecian poet and grammarian, the author

of several tragedies, who lived at Alexandria, 280 B.C. Of his writings there remains only a dramatic monologue called *Cassandra.*

Lycopodium (lī-ku-pōd′i-um), a genus of plants of the nat. order Lycopodiaceæ (see *Lycopods*). The seeds of *L. clavatum*, or common club-moss, are very minute and resemble an impalpable yellow powder, which burns explosively, and is used for producing theatrical lightning. *L. complanatum*, the ground pine is a trailing evergreen, found commonly growing in woods and shady places throughout the United States.

Lycopodium Selago. *a*, Leaf; *b*, Sporangium in the axil of bract; *c*. Spores—magnified.

Lycopods (lī′ku-pōds), Lycopodiaceæ, the club-moss tribe; a nat. order of vascular acrogens, chiefly inhabiting boggy heaths, moors and woods. They are intermediate in their general appearance between the mosses and the ferns, and are in some respects allied to the Coniferæ. The lycopods occur in all parts of the globe, but grow most luxuriantly in tropical or mild climates. In the carboniferous era they attained a very large size, rivaling trees in their height and the thickness of their stems, as in the case of the Lepidodendron.

Lycurgus (lī-kur′gus), the great legislator of the Lacedæmonians, was the son of Eunomus, king of Sparta. His history commences with the year 898 B.C., when he might have usurped the throne on the death of his brother, but preferring to guard the kingdom for the unborn child of the latter, he devoted himself to the study of legislation. On his nephew becoming of age, Lycurgus traveled into Crete, Egypt and Asia, and thus prepared himself to give Sparta the laws which have rendered his name immortal. His object was to regulate the manners as well as the government, and to form a warrior nation, in which no private interest should prevail over the public good. It is said that Lycurgus persuaded the Spartans to swear that they would observe these laws till his return from another journey, and that he th' departed, and they never heard of him more. One account states that he starved himself to death, but it is more probable that he retired to private life, and died naturally, as Lucian records, at the age of eighty-five.

Lydgate (lid′gāt), John, an English writer, born in 1375; died in 1460. He was educated at Oxford, and became a priest, after which he traveled in France and Italy and made himself well acquainted with such writers as Dante, Boccaccio and Chartier. He afterwards published many poems, as *The History of Troy*, *The Story of Thebes*, *The Fall of Princes*, etc. A selection of his works was published by the Percy Society in 1840.

Lydia (lid′i-a), in ancient geography, a large and fertile country of Asia Minor, divided from Persia by the river Halys (now Kizil Irmak). It attained its highest prosperity under the Mermnadæ dynasty, beginning with the half mythological Gyges (716 B.C.), and ending with Crœsus (546 B.C.), who was conquered by the Persians under Cyrus. The Lydians are credited with the invention of certain musical instruments, the art of dyeing wool, also the art of smelting and working ore. Sardis was the capital.

Lydian-stone, a siliceous flinty slate, having the appearance of black velvet, found in many countries, but first brought from Lydia and used as a touch-stone.

Lye (lī), water impregnated with alkaline salt imbibed from the ashes of wood, or any solution of an alkali used for cleaning purposes, as for types after printing, ink-rollers, for making soap, neutralizing acids, etc.

Lyell (lē′el), Sir Charles, geologist, born at Kinnordy, Forfarshire,

Sir Charles Lyell.

in 1797; died in London in 1875. He was educated at Oxford, began to study law, but afterwards resolved to devote

his time and fortune to geological research. For this purpose he visited the continent of Europe and the United States. His first important work was the *Principles of Geology* (1830-33), in which he demonstrated that the geological development of the earth was the result of ordinary causes, not of phenomenal paroxysms. A portion of this book afterwards formed the basis of the *Elements of Geology*. Another important work was the *Antiquity of Man* (1863), in which he summarized the evidence in favor of the theory that the race of man was much older than was currently believed. Lyell was knighted in 1848, and made a baronet in 1864. His *Life and Letters* were published in 1881.

Lyly, or LILLY, JOHN. See *Lilly*.

Lyme-grass (līm), the popular name of certain grasses. One species, *Elymus arenarius*, is a native of Britain. They are all coarse grasses.

Lyme Regis, a municipal borough and seaport of England, in Dorsetshire, 22 miles west of Dorchester, intersected by the Lyme. Pop. (1911) 2772.

Lymington (līm'ing-tun), a seaport and watering place of England, in the county of Hants, at the mouth of the Boldre, 12 miles southwest of Southampton. Pop. 4165.

Lymph (limf), in physiology, the fluid resulting primarily from the assimilation of food, and also obtained from the blood and tissues, and which is contained within a system of vessels called *lymphaties* and *lacteals*. The clearest and simplest view of the lymphatic system is to consider these vessels as the media through which matters are absorbed from the alimentary canal on the one hand, and from the blood and tissues on the other. The matters so absorbed are elaborated and converted in the *lymphatie glands* into *lymph*, a fluid which presents the essential features of the more highly elaborated blood, and which is ultimately poured into the blood, mainly through the *thoraeie duet*. Through this system the continual loss which the blood and body suffer is made good. The lymph as it exists in the lymphatic vessels is a colorless, transparent fluid, destitute of smell. The lymphatic glands are highly important structures, for it is only after passing through them that the lymph is fully elaborated and ready to enter the blood. Their average size is that of a small almond, and they are generally arranged in groups. As distinguished from the lymphatics the lacteals are the vessels by which the chyle is absorbed from the small intestine and elaborated in the lymphatic glands of the mesentery to be afterwards poured into the thoracic duct. This duct pours its contents into a large vein at the root of the neck. Lymphatic vessels and glands are numerous throughout the body, especially in the subcutaneous tissue, where they form a veritable, highly elaborated, ramified network of fine channels and spaces, and are subject to special diseases.

Lynchburg (linch'burg), a city of Campbell county, Virginia, on James River, 146 miles west by south of Richmond. It contains iron and brass foundries, a large cotton factory, several flour mills, and extensive tobacco manufactories. Tobacco is the chief article of export, the surrounding country producing leaf of high excellence. The Randolph-Macon Woman's College is located here. Pop. 29,494.

Lynch-law, the practice of punishing men for crimes or offences by private unauthorized persons without a legal trial. The origin of the phrase, used chiefly in America, has been variously accounted for, but it is evidently derived from some person named Lynch, who adopted a rough and ready mode of punishing offenders. The system has grown in use until now it is a serious evil and one difficult to eradicate.

Lyndhurst (lind'hurst), JOHN SINGLETON COPLEY, BARON, an eminent lawyer and statesman, was born of Irish parentage at Boston, United States, in 1772, and died in 1863. Intended by his father, J. S. Copley, the artist, to be a painter, he studied for some time under Reynolds and Barry, then entered the University of Cambridge in 1791, took his M.A. degree in 1797, became a fellow of Trinity College, and was called to the bar at Lincoln's Inn in 1804. In 1817 he ably defended Watson and Thistlewood for high treason, was appointed chief-justice for Chester, and in 1818 entered Parliament. In 1819 he became solicitor-general in the Liverpool administration, in 1824 attorney-general, and in 1826 master of the rolls. He was raised to the peerage as Baron Lyndhurst, and became lord-chancellor in 1827, a post he retained till 1830. During the ministry of Earl Grey (1830-34) he held the position of chief baron of the exchequer. He was a formidable opponent of the reform bill. He was again chancellor in 1834, and a third time when the Conservatives returned to power in 1841. His eloquence was much appreciated by the Tory party, especially in the House of Lords, where he continued to take an

interest in foreign politics down to the year 1859, when he vigorously attacked the policy of Napoleon III.

Lyndsay. See *Lindsay.*

Lynedoch (līn'dok), THOMAS GRAHAM, LORD, a British general, was born at Balgowan, England, in 1750, and died in 1843. Until 1792 he lived as a country gentleman, but when his wife died he entered the army as a volunteer, and greatly distinguished himself at the siege of Toulon. He afterwards took part with Sir John Moore in the expedition to Sweden and the retreat to Coruña; and was engaged in the Walcheren expedition. Being sent to take command of the forces besieged by the French at Cadiz, he gained the victory of Barosa in 1811. He next joined Wellington's army and shared in the Peninsular war, taking part in the battle of Vittoria and the siege of St. Sebastian. In 1814, after the unsuccessful siege of Bergen-op-Zoom, he was created Baron Lynedoch.

Lynn (lin), a city and seaport of Essex county, Massachusetts, on an arm of the Massachusetts Bay, about 10 miles northeast from Boston. The town has some fine public buildings, including the city hall, music hall, Odd Fellows' hall, etc. It has a large park, more than 2000 acres in area, known as Lynn Woods. Its chief industry is the manufacture of boots and shoes, of which upwards of 15,000,000 pairs are stated to be annually made. The manufacture of leather is another large industry, as also that of electrical appliances, the value of which amounts to many millions of dollars annually. Pop. 89,336.

Lynn-Regis, or KING'S LYNN, a seaport town of England, County of Norfolk, on the Wash, 38 miles W. N. W. of Norwich. The principal buildings are St. Margaret's, and All Saints' churches, St. Nicholas' chapel, the guildhall, athenæum, custom house, corn exchange, etc. The harbor is commodious, and there are two docks. Shipbuilding is carried on and the trade is considerable. Pop. (1911) 20,205.

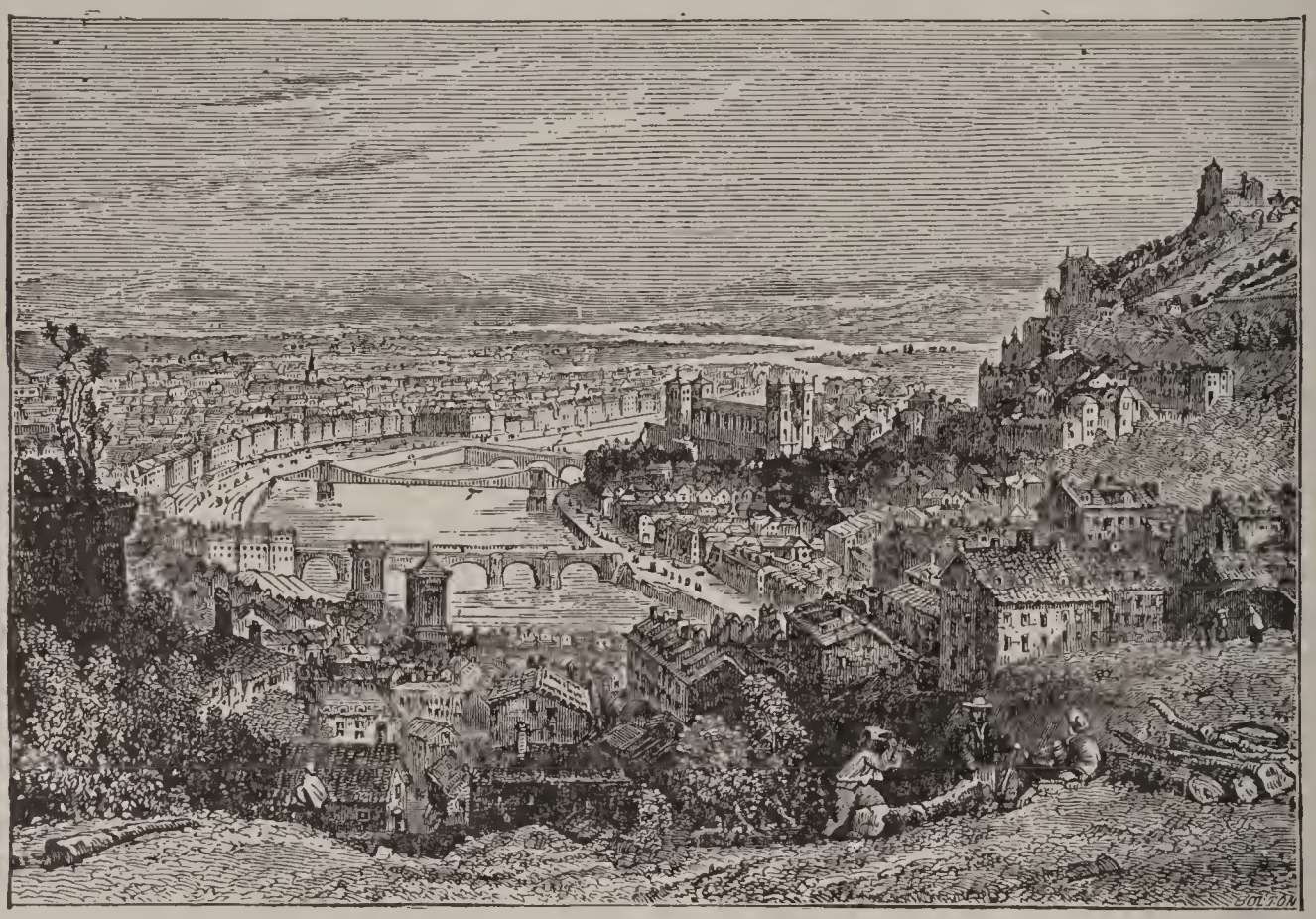
Lynx (links), the popular name of several species of feline carnivora, resembling the common cat, but with ears longer and tufted with a pencil of hair, and tail shorter. The lynxes have been long famed for their sharp sight, which character they probably owe to their habit of prowling about at night, and their brilliant eyes. The European lynx is the *Felis lynx*, the Canadian lynx is the *F. canadensis.* In Asia lynxes are tamed for hunting.

Lyon - king - at - (or of-) arms, in Scotland, a heraldic officer who takes his title of Lyon from the armorial bearings of the Scottish kings, the lion rampant. The officers serving under him are heralds, pursuivants and messengers. The jurisdiction given to him empowers him to inspect the arms and ensigns-armorial of all the noblemen and gentlemen in the kingdom, to give proper arms to such as deserve them, and to fine those who use arms which are not matriculated. Called also *Lord Lyon.*

Lyonnais (lē-on-nā), an ancient province of France, of which Lyons was the capital. It now forms the departments of the Rhône, Loire, Haute-Loire and Puy-de-Dôme.

Lyons (lē-on, or lī'unz; French, *Lyon;* Latin, *Lugdunum*), the second city in France, capital of the department of the Rhône, 240 miles S. S. E. of Paris, and 170 miles north of the Mediterranean. The town is built partly on a peninsula between the Saône and the Rhône, and partly on the opposite banks of the rivers on either side. The rivers are crossed by about a score of bridges, and the city is surrounded by eighteen detached forts, which form a circuit of sixteen miles. Parts of the city are old, squalid and unhealthy, but as a whole it has a stately and imposing appearance, and is finely seen from the Fourvières, an eminence on the right bank of the Saône, crowned by the church of Nôtre Dame, where a magnificent view extending to the Alps may be had. Among the chief buildings are the cathedral, mostly of the thirteenth century; the church of St. Martin d'Ainay, with a cupola supported by ancient Roman columns and a crypt believed to be of the ninth century; the church of St. Nizier, a fine example of flamboyant Gothic; the Hôtel de Ville, Palais de Justice, etc. In the archiepiscopal palace, situated near the cathedral, 1000 Protestants were butchered in 1572 as a sequel to St. Bartholomew. The Hôtel de Ville is considered one of the finest edifices of the kind in France. The public library has over 200,000 volumes and is rich in MSS. The Palace des Arts or museum contains a picture-gallery and other collections. The chief educational establishments are a university college, a Catholic college, a lyceum, a normal school, la Martinière, a school of industrial arts, etc. Lyons carries on various industries, but its chief glory is that of being the greatest center of the silk manufacture in the world, giving employment in the town or surrounding neighborhood to 240,000 people. A

great many of the weavers work in their own dwellings, not in factories. There is also a large trade by railway, river and canal. The origin of Lyons cannot be traced. When Cæsar invaded Gaul it had become a place of some importance. Towards the end of the second century it numbered thousands of Christians among its inhabitants. It was sacked by the Huns and Visigoths, and in the eighth century fell for a time into the hands of an army of Saracens from Spain, but recovered its prosperity under Charlemagne, on the dissolution of whose empire it became the capital of the Kingdom of Provence. In 1312, during the reign of Philip the Fair, Lyons was annexed to the crown of France. During the revolution the city suffered severely by the paralysis of its industry, and by the murderous excesses of the emissaries of the Paris Convention, whom the citizens had defied, the chief buildings being destroyed and many of the inhabitants butchered. Pop. (1906) 472.114.



General View of Lyons.

Lyons, GULF OF (in French, *Golfe du Lion*), a bay of the Mediterranean, on the southeastern coast of France. The principal ports on this gulf are Toulon, Marseilles and Cette.

Lyre (līr), one of the most ancient stringed instruments of music, consisting of a body with two horn-like pieces rising from it, and a cross-piece between the horns, from which to the lower part the strings were stretched. It was used by the Egyptians, Assyrians and Greeks. It is said to have had originally only three strings, but the number was afterwards increased to seven, then to eleven, and finally to sixteen. It was played with the *plectrum* or lyre-stick of ivory or polished wood, also with the fingers, and was used chiefly as an accompaniment to the voice. The body of the lyre was hollow, to increase the sound. A musical instrument of similar construction is still to be met with in the hands of the shepherds of Greece and among certain tribes of Africa.

Lyre-bird (*Menūra superba*), an insessorial bird of New South Wales, somewhat smaller than a pheasant. The tail of the male is remarkable for the three sorts of feathers that compose it, which by their shape and arrangement resemble the form of an ancient Greek lyre. It has a pleasing song, and is said to be capable of imitating the voices of other birds.

Lyric Poetry (lir'ik), originally, poetry sung to or suited for the lyre; in modern usage, that class of poetry in which are expressed the

poet's own thoughts and feelings, or the emotions attributed to another, as opposed to epic or dramatic poetry, to which action is essential.

Lys (lēs), a river which rises in France, runs through Belgium, and enters the Scheldt at Ghent; length, 100 miles.

Lysander (lē-san'dėr), an ancient Greek general who was appointed to the command of the Spartan fleet off the coasts of Asia Minor in 407 B.C., during the Peloponnesian war. In

Various forms of Egyptian, Assyrian and Greek Lyres.

405 B.C. he defeated and captured the Athenian fleet off Ægospotamos, and thus put an end to the war. He was killed in a battle with the Thebans 395 B.C.

Lysias (lish'e-as), an Athenian orator, born about 458 B.C. He studied philosophy and eloquence at Thurii in Magna Græcia, and was there employed in the government. On the defeat of the Athenians in Sicily he returned to Athens in 412, but was banished by the thirty tyrants. When the city recovered its freedom he returned in 403, and gave instruction in eloquence, also writing speeches for others to deliver. He died in 378. Only about thirty of his numerous orations have been preserved.

Lysimachia (lis-i-mā'ki-a), a genus of herbs, nat. order Primulaceæ. Four species occur in the United States, known by the name of loosestrife, and one (*L. longifolia*) is called Prairie money-wort.

Lysimachus (lī-sim'a-kus), a general in the army of Alexander the Great, was born in Macedonia 360 B.C., and at the death of the emperor and the division of the empire he became king of Thrace. During the latter years of his reign he was instigated by his wife to kill his son Agathocles. This murder caused his subjects to rebel, and in the war which followed Lysimachus was defeated and slain at the battle of Corus in B.C. 281.

Lysippus (lī-sip'us), a Greek sculptor who flourished in Sicyon about 330 B.C., in the time of Alexander the Great.

Lytham (lith'am), a watering place in Lancashire, England, agreeably situated in a sheltered position on the north shore of the estuary of the Ribble. Pop. (1911) 9464.

Lythraceæ (lī-thrā'se-ē), the loosestrife tribe, a nat. order of polypetalous exogens, containing about thirty genera of herbs, trees and shrubs, of various habit, often with square branches; the leaves usually are opposite or whorled, entire, and shortly petiolate; the flowers being often large and showy. Henna and tulipwood belong to the order.

Lythrum (lith'rum), a genus of plants, the type of the order Lythraceæ (which see). *L. salicaria*, purple loosestrife, is a tall and handsome plant.

Lyttelton (lit'l-tun), a seaport in the district of Canterbury, New Zealand, connected with Christchurch—of which it is the port—by a railway 8 miles long. There is a fairly good harbor, improved by a breakwater, etc., a graving dock, and a considerable shipping trade. Pop. (1906) 3941.

Lyttelton, George, Lord, a poet and historian, eldest son of Sir Thomas Lyttelton, baronet, was born in 1709, and died in 1773. He entered Parliament in 1730, and joined the opposition led by Pitt and Pulteney. In 1756 he was raised to the peerage. He was on terms of intimacy with Pope, and the patron of Fielding and Thomson. His *Miscellanies* in prose and verse had once a reputation, but are now forgotten. In his latter years he wrote his *Dialogues of the Dead* and a *History of Henry II.* His son, Thomas, Lord Lyttelton, born in 1744; died in 1779. His early years were remarkable for a promise of ability which was never fulfilled, his dissipated habits soon estranged him from his father and separated him from his wife. Such, however, was his literary reputation and political status that he was claimed at one time as the writer of the *Junius Letters*. It is said that from a presentiment he predicted his death three days before it occurred, and some have thought he committed suicide.

Lytton (lit'un), Edward George Earle Lytton Bulwer-Lyt-

TON, BARON, youngest son of General Bulwer, of Woodalling, and Elizabeth Barbara Lytton, of Knebworth, was born in 1805; died in 1873. He entered Trinity Hall, Cambridge, was graduated B.A. in 1826, M. A. in 1835, and gained the chancellor's prize medal for his English poem on *Sculpture*. He published poetry at an early age, but first gained reputation by the novels *Pelham* and the *Disowned* (1828), *Devereux* (1829), and *Paul Clifford* (1830). These were followed with the popular romances of *Eugene Aram*, the *Pilgrims of the Rhine*, *The Last Days of Pompeii*, *Rienzi* and *Ernest Maltravers*, with its sequel, *Alice*. In connection with Macready's management at Covent Garden Bulwer-Lytton produced his *Duchess de la Vallière*, which proved a failure, but this was retrieved by the instant success of the *Lady of Lyons*, *Richelieu* and *Money*. When he had thus shown his quick adaptability of talent he returned to novel writing, and published in steady succession—*Night and Morning*, *Zanoni*, *The Last of the Barons*, *Lucretia*, *Harold*, *The Caxtons*, *My Novel*, and *What Will He Do With It?* In 1845 he published a poetical satire called *The New Timon*, in which he attacked Tennyson, who replied more vigorously than had probably been expected. He entered Parliament for St. Ives in 1831, and supported the Reform Bill as a Whig; but he changed his opinions and latterly supported the Conservatives. Under Lord Derby's ministry he was colonial secretary, and in 1866 entered the House of Lords as Baron Lytton. He was elected rector of Glasgow University in 1856. His later literary works were *The Coming Race*, published anonymously (1871), *The Parisians* (1872), and *Kenelm Chillingly* (1873). Among his poetic works were the epic *King Arthur;* the *Lost Tales of Miletus; Brutus*, a drama, etc. As an author he is usually known under the name of Bulwer.

Lytton, THE RIGHT HON. EDWARD ROBERT BULWER-LYTTON, EARL OF, G.C.B., son of the novelist and politician, was born in 1831; educated at Harrow and Bonn; entered the diplomatic service in 1849 as attaché at Washington, and successively served in the embassies of Florence, Paris, The Hague, St. Petersburg, Constantinople, Copenhagen and Lisbon. He was appointed Viceroy of India by the government of Mr. Disraeli in 1876, and it was during his administration that the queen was proclaimed Empress of India. This post he resigned in 1880, being then created an earl. He early attained a certain reputation as a poet, under the pen name of *Owen Meredith;* and published *Clytemnestra and other Poems*, *Lucile*, *Tannhäuser, or the Battle of the Bards*, *Fables in Song* and *Glenaveril*, besides prose works. He also published the life and letters of his father. He was appointed ambassador to Paris in 1888. He died in 1891.

M

M is the thirteenth letter and tenth consonant of the English alphabet. It represents a labial and nasal articulation, the compression of the lips being accompanied with the fall of the uvula so as to allow the voice to form a humming sound through the nose, which constitutes the difference between this letter and *b*.

Maartens, MAARTEN, pen name of J. M. M. VAN DER POORTIN SCHWARTZ, a Dutch author, born at Amsterdam in 1858. He spent part of his boyhood in England and writes in English. Some of his best known novels being *The Sin of Joost Avelingh*, *God's Fool*, *The Greater Glory* and *My Lady Nobody*.

Maas. See *Meuse*.

Maastricht. See *Maestricht*.

Mab, a mythical personage often represented as queen of the fairies.

Mabie (mā'bē), HAMILTON WRIGHT, author and editor, born at Cold Spring, New York, in 1845. In 1879 he became assistant editor of the *Christian Herald*, afterward *The Outlook*. He is the author of numerous works.

Macadam (ma-kad'am), JOHN LOUDON, the great improver of roads, was born at Ayr, probably in 1756, and died in 1836. Having spent his early years in the United States he returned to Great Britain and was appointed agent for victualling the navy in the western ports. In 1815 he was appointed surveyor of the Bristol roads, and thus received the opportunity to put his road-making improvements into practice. He was so successful in this that the House of Commons presented him with a sum of £2000, and his mode of road-making is still known as macadamization. This method consists in covering the roadway or forming the roadcrust with small broken stones to a considerable depth, and consolidating them by carriages working upon the road, or by rollers, so as to form a hard, firm and smooth surface.

Macao (ma-kä'o, or ma-kou'), a seaport town and Portuguese settlement in China, on a peninsula at the mouth of the Canton River, about 40 miles from Hong-Kong, considered the healthiest residence in Southeast Asia. The settlement has an area of about 21 sq. miles, and its principal export is tea. Its commerce has greatly declined since the rise of Hong-Kong and the Chinese treaty ports. It was in 1575 that the Portuguese first obtained permission to form a settlement and to trade at Macao, and in 1844 it was declared a free port. Pop. 78,627.

Macaroni, MACCARONI (mak-a-rō'-ni), a preparation of wheaten flour, used as food, usually simply boiled and served up with grated cheese, or in soups, etc. Macaroni is generally made in tubular pieces resembling a long pipe-stalk, by pressing it through holes in a metal plate. *Vermicelli* is a similar preparation, but is more thread-like. Macaroni is a wholesome food, made best in the neighborhood of Naples, and considered a national dish of the Italians.—Macaroni was used as a term of contempt for a coxcomb or swaggerer about 1770-75.

Macaronic Poems (mak-a-ron'ik), a kind of facetious Latin poems, in which are interspersed words from other languages, with Latin inflections. They were first written (at least with the above designation) by Teofilo Folengi, 1484-1544, and were introduced into England in the reign of Henry VII. Drummond of Hawthornden is credited with a macaronic poem, *Polemo-Middinia*, published in 1691. There is good reason, however, to believe that it is later than Drummond's time, and that it is the work of Dr. Pitcairne (1652-1713).

Macaroon (mak'a-rön), a favorite kind of biscuit, made of the meat of sweet almonds instead of ordinary flour.

Macassar (ma-kas'ar), a town on the island of Celebes, capital of the Dutch government of Celebes. It has an excellent harbor, and carries on a considerable trade in rice, spices, ebony, sandal-wood, etc. Pop. 17,925. See *Celebes*.

Macassar, Straits of, between Celebes and Borneo, about 350 miles long, and from 110 to 140 wide, except at the north entrance, where it is contracted to 50 miles. Navigation is difficult because of the numerous shoals and small islands.

Macaulay (mȧ-kạ'le), Thomas Babington, Lord, historian, essayist and politician, was born in 1800 at Rothley Temple, Leicestershire, and died at Kensington in 1859. His father, Zachary Macaulay, who had been a West Indian merchant, was a well-known philanthropist, while his mother was Selina Mills, the daughter of a Bristol Quaker. Their son Thomas was severely educated

Lord Macaulay.

in the rigid Calvinism of what was known as the 'Clapham sect.' In 1818 he entered Trinity College, Cambridge, where he obtained the Chancellor's medal for a poem on *Pompeii*, and a second time for a poem on *Evening;* received a fellowship, and took his M.A. degree in 1825. Before this he began to contribute to *Knight's Quarterly Magazine*, in which appeared his poems of the *Armada*, *Ivry*, and the *Battle of the League;* and in 1825 he inaugurated his brilliant career in the *Edinburgh Review* by his article on Milton. He was called to the bar at Lincoln's Inn in 1826. He entered parliament in 1830 as member for Calne, and made his first speech in support of freedom for the Jews in England. He also spoke in favor of the antislavery legislation, and delivered several speeches in favor of the Reform Bill of 1832. He afterwards became member for Leeds, but resigned his seat and proceeded to Calcutta as legal member of the supreme council of India, in which position he prepared a new penal code that was not adopted because of its liberal dealing with the native races. Returning from India he was elected a member of parliament for Edinburgh, was made secretary of war in the Melbourne ministry (1839-41); and when the Whigs returned to power in 1846 he was appointed paymaster of the forces. At the election of the same year his Edinburgh constituency refused to reëlect him, but their attitude was reversed in 1852, he being returned, although he had not presented himself as a candidate. During his political career Macaulay had continued his literary labors. In 1842 he published his *Lays of Aneient Rome;* and in 1848 appeared the first two of the five volumes of his *History of England*, which covers the period between the accession of James II and the death of William III. This brilliant rhetorical exposition, although touched with partisanship and with a tendency to paradox, has attained the position of an English classic. He was created a peer in 1857, and at his death he was buried in Westminster Abbey. The *Life and Letters of Macaulay* has been published by his nephew, Sir George Otto Trevelyan (1876).

Macaw (ma-kạ'), a genus (*Macrocercus*) of beautiful birds of the parrot tribe. The macaws are magnificent birds, distinguished by having their cheeks destitute of feathers, and their tail-feathers long (hence their generic name). They are all natives of the tropical regions of South America. The largest and most splendid in regard to color is the great scarlet or red and blue macaw (*M. Aracanga* or *macao*). The great green macaw (*M. militaris*) and the blue-and-yellow macaw (*M. ararauna*) are somewhat smaller.

Red and BlueMacaw. (*Macrocercus Aracanga.*)

Macaw-tree, the name given to several species of trees of the genus *Acrocomia*, natives of tropical America, as *A. fusiformis* and *A. selerocarpa*, the fruit of which last yields an oil of a yellowish color of the consistence of butter, with a sweetish taste and an odor of violets, used by the natives of the West Indies as an emollient in painful

affections of the joints, and largely imported into Britain, where it is sometimes sold as palm-oil, to be used in the manufacture of toilet soaps.

Maça'yo. See *Maccio.*

Macbeth (mak-beth'), MACBEDA, or MACBETHAD, son of Finnlaech, a king of Scotland who reigned from 1040 to 1057. The facts of his life, so far as they are known, are these: During the reign of Duncan he was 'mormaer' of Moray by inheritance, and by his marriage with Gruoch, granddaughter of Kenneth IV. This Duncan, in his attempt to subdue the independent chiefs of the north, was slain by Macbeth at 'Bothgowan,' which is supposed to be near Elgin. By this means Macbeth became king, and, according to all accounts, his reign was fairly successful. In 1050 he is said to have gone on a pilgrimage to Rome. At the death of their father the sons of Duncan had taken refuge with their Uncle Siward, earl of Northumberland, and with his aid they invaded Scotland in 1054; a battle was fought at Dunsinane, but it was not until 1057 that Macbeth was finally defeated and slain at Lumphanan in Aberdeen. The legends which gradually gathered round the name of Macbeth were collected by John of Fordun and Hector Boece, and reproduced by Holinshed in his Chronicle, and there found, as is supposed, by Shakespere, who has made such splendid use of them.

Maccabees (mak'a-bēz), a dynasty of ruling Jewish priests of whom the first who came into prominence was Mattathias. During the persecutions of Antiochus Epiphanes he slew a Jew who came to the altar to renounce his faith, and then fled to the mountains with his five sons—Johannes, Simon, Judas, Eleazar and Jonathan. Being joined by numerous patriotic Jews they were able to make successful resistance to the national foe and reëstablish the ancient religion. When Mattathias died (166 B.C.) his sons Judas and Jonathan became successively leaders of the national movement. The last remaining member of the family was Simon, who now carried forward the national cause to a triumphant issue, reduced 'the tower' of Jerusalem, and established the power of the new state. Under his rule trade and agriculture flourished, until (in 135 B.C.) he was treacherously murdered by Ptolemy, his own son-in-law.

Maccabees, BOOKS OF, treat of the Jewish history under the Maccabean princes; they are five in number, the first two of which are included in the English Apocrypha, and are accounted canonical by the Roman and Greek churches.

MacCarthy (ma-kar'thi), DENIS FLORENCE, poet, born in Ireland about 1820; died in 1882. His ballads, poems and lyrics were published in 1850. He translated six of Calderon's dramas; wrote a volume on *Shelley's Early Life* in 1872, and contributed an ode to the Moore Centenary in 1879. A collected edition of his poems was published in 1884.

MacCarthy, JUSTIN, novelist, historian and politician, was born at Cork in 1830; became connected with the Liverpool press in 1853; joined the staff of the *Morning Star* in 1860, and ultimately became its chief editor in 1864. He afterwards traveled for three years in the United States; contributed to various English and American magazines, and was connected with the *Daily News*, 1870-85. His historical writings, which are much esteemed, include *History of Our Times*, 1837-80, *History of the Four Georges*, etc. In addition he wrote a number of highly popular novels. He has represented Longford in parliament since 1879 as a Home-Ruler.—His son, JUSTIN HUNTLEY MACCARTHY (born in 1859), is also an M.P. of the same party, and is favorably known in literature, his works including *England Under Gladstone, Ireland Since the Union, The French Revolution,* etc.

Macchiavelli. See *Machiavelli.*

MacClellan (ma-klel'an), GEORGE BRINTON, an American general, born at Philadelphia in 1826; died in 1885. He was trained at the West Point Military School; served in the Mexican war; joined the Red River expedition as engineer; and in 1855 was appointed to the commission which reported on the condition of European armies, and watched the military operations during the Crimean war. At the outbreak of the Civil war in the States he was victorious in West Virginia, superseded McDowell after the first battle of Bull Run, and became commander-in-chief on November 1, 1861. In this capacity he organized the raw levies of the North and advanced against Richmond the following spring, but was relieved from his supreme command by President Lincoln in 1862, remaining in command of the army before Richmond. Here he was defeated in a series of battles lasting seven days, and was forced to retire from his lines in front of Richmond. During the second battle of Bull Run, he was recalled to

Washington, and when Lee advanced into Maryland, MacClellan pursued and fought the battles of South Mountain and Antietam (September 14-17, 1862). The result was the withdrawal of Lee across the Potomac, MacClellan following so deliberately that the authorities at Washington grew dissatisfied with his apparent slackness in following the enemy, and he was relieved from his command and retired from the army. In 1864 he was nominated for the presidency, but was overwhelmingly defeated by Abraham Lincoln.

Macclesfield (mak'lz-fēld), a town of England, Cheshire, 17½ miles south by east of Manchester, on the Bollin. It is pleasantly situated, and the principal buildings are the church of St. Michael, an ancient structure, founded by Eleanor, queen of Edward I, in 1278; St. Peter's and St. Paul's; a spacious town-hall, subscription library, theater, etc. The staple manufacture is silk, and the cotton manufacture has also made some progress. In the vicinity are extensive coal-pits and stone and slate quarries. Pop. (1911) 34,804.

MacClintock (m a-k l i n't o k), Sir Francis Leopold, born at Dundalk in 1819; entered the navy in 1831; became a lieutenant in 1845; and in 1848 joined the expedition sent out by the British government in search of Sir John Franklin, the Arctic explorer. In 1852 he was instrumental in rescuing MacClure and his companions. In 1857, as commander of the Fox, a vessel equipped by Lady Franklin, he discovered evidence of the death of Franklin. He was knighted in 1859 and made vice-admiral in 1877.

MacClure (ma-klur'), Sir Robert John Le Mesurier, born in 1807; died in 1873. He entered the navy in 1824; joined an Arctic expedition in 1836; accompanied Sir John Ross into the same region in 1848; and himself took command of an Arctic expedition in 1850. He penetrated as far north as Melville Sound, and was the first to make the northwest passage between the Atlantic and Pacific, this being done partly by sledging over the ice, his ship being abandoned.

MacCosh (ma-kosh'), James, was born in Ayrshire in 1811; became a minister of the Church of Scotland first at Arbroath, then at Brechin; joined the Free Church after the disruption movement; was appointed professor of logic and metaphysics in Queen's College, Belfast, 1851; was president of Princeton College, New Jersey, from 1868 to 1888, when he resigned. He wrote various works on philosophy and psychology, among them the *History of Scottish Philosophy* (1874); the *Development Hypothesis* (1876); *The Emotions* (1880); *Psychology* (1886) etc. He died in 1894.

MacCulloch (ma-kul'lo), Horatio, one of the most distinguished of Scottish landscape painters, was born in Glasgow in 1806; died near Edinburgh in 1867. His paintings are nearly all of Scotch scenery. Among them are the *Cuchulin Mountains*, *A Dream of the Highlands*, *Highland Loch*, and *Mist on the Mountains*.

MacCulloch, Hugh, financier, b o r n at Kennebunk, Maine, in 1808; died in 1895. He was made comptroller of the currency in 1863 and secretary of the treasury in 1865, and was remarkably successful in raising funds for the expenses of the Civil war. He was secretary of the treasury again, 1884-85. He wrote *Men and Measures of Half a Century*.

MacCulloch, John, a British mineralogist, born in 1773; died in 1835. Educated at Edinburgh for the medical profession, he became assistant surgeon in the army, and ultimately practiced privately at Blackheath. He undertook a government mineralogical and geological survey of Scotland in 1826, a task which was completed in 1832. As the result of his labor he published *A Description of the Western Islands of Scotland; A Geological Classification of Rocks*, etc.

MacCulloch, John Ramsay, a political economist and statistician, born in Wigtonshire in 1789; died in London in 1864. He edited the *Scotsman* newspaper and contributed largely to the *Edinburgh Review*. In 1828 he was appointed professor of political economy in London University, became comptroller of the stationery office in 1838, and retired on a pension of £200 a year. Among his numerous works are *The Principles of Political Economy* (1825); *Historical Sketch of the Bank of England* (1831); *Dictionary of Commerce* (1832); *Geographical Dictionary* (1841), and *The Literature of Political Economy* (1845).

Macdonald (mak-don'ald), Flora, born on South Uist, one of the Hebrides, in 1720; died in 1790. She became celebrated in 1746 for the part she took in assisting Prince Edward Charles to escape the government pursuit, when she conveyed him from South Uist to Skye, disguised and in an open boat. For this cause she was imprisoned for several months in London and then

released. She married, settled in America, but afterwards returned to and died in Skye.

Macdonald, Sir John Alexander, a Canadian statesman, was born in Scotland in 1815. Being taken to Canada, he was educated at Kingston; admitted to the bar in 1835; entered parliament for Kingston in 1844; and became successively a member of the executive council, receiver-general, commissioner of crown lands, and attorney-general. He became premier in 1869, a position which he held until 1873 when he resigned on account of the Pacific Railway charges, but resumed the office in 1878, and retained it until his death, June 6, 1891. He was an active promoter of the Canadian Pacific Railway and the Canadian confederation movement, and was a recognized leader of conservative party.

MacDonald, George, novelist and poet, was born at Huntly, Scotland, in 1824; educated at King's College, Aberdeen; became an Independent minister, but soon adopted literature as a profession. Among his numerous novels are *David Elginbrod*, *Alec Forbes*, *Annals of a Quiet Neighborhood*, *Robert Falconer*, *Malcolm*, *The Marquis of Lossie*, *Castle Warlock*, etc. He also published poetry, stories for the young, *Unspoken Sermons*, and other productions. He died in 1905.

Mace (mās), a weapon of war in use in Europe as late as the sixteenth century. It consisted of a staff about 5 feet long, with a heavy metal head, which assumed a variety of forms, but was frequently in the form of a spiked ball. Another kind of mace is a sort of heavy ornamental staff used as an emblem of authority in universities, courts of law, parliament, etc.

Mace, a spice, the dried aril or covering of the seed of the nutmeg (*Myristica fragrans*), this covering being a fleshy net-like envelope somewhat resembling the husk of a filbert. When fresh it is of a beautiful crimson hue. It is extremely fragrant and aromatic, and is chiefly used in cooking and frequently in pickling.

Macedo (ma'sē-dō), Joaquim Manual, a Brazilian poet, born in 1820; died in 1882. The Brazilians regard him as their best poet, and he also wrote novels and plays, which met with much success.

Macedonia (mas-e-dō'ni-a), in ancient geography, a territory lying to the north of Greece, which first became powerful under King Philip, the father of Alexander the Great, and conqueror of Greece. Alexander the Great added immensely to the empire of Macedonia, and made what had only been a petty province mistress of half the world. After his death the empire was divided; dominion over Greece was lost; and the result of the battles of Cynoscephalæ (197 B.C.) and Pydna (168 B.C.) was to reduce the ancient kingdom to a Roman province. Macedonia now forms a part of Turkey in Europe, and is inhabited by Wallachians, Turks, Greeks and Albanians.

Maceió (mȧ-sā'i-o), a Brazilian seaport, capital of province Alagoas, on the Atlantic, lat. 9° 39′ S. Chief exports: cotton, rum, and sugar. Pop. 1908 est. 33,000.

Maceo (ma'se-ō), Antonio, a Cuban patriot, born at Santiago de Cuba in 1843. He was a prominent leader in the rebellion of 1868-78, was banished, but returned again in 1895 and took an active part in the insurrection of that year. He was killed in a skirmish in 1896.—His brother, José, born in 1846, was equally prominent in both the insurrections named, and was also killed in battle in 1896.

Macerata (mȧ-chā-rä'tȧ), a town in Italy, capital of the province of the same name, on a lofty eminence midway between the Apennines and the sea, 21 miles south of Ancona. The principal buildings are the cathedral, provincial palace and theater, all situated in a large public square, various churches and convents, a college, museum, etc. Pop. 22,473.—The province, bounded north by Ancona, west by Umbria, south by Ascoli, and east by the Adriatic, has an area of 1056 square miles, produces much corn, fruit and hemp, and rears great numbers of sheep and cattle. Pop. 259,429.

Macfarren (mak-far'en), Sir George Alexander, musical composer, born at London in 1813; died in 1887. He was educated at the Royal Academy of Music; became a member of the board of the academy, and ultimately chairman and principal; was elected professor of music, Cambridge University (1875); and was knighted by the queen in 1883. His chief operas are *The Devil's Opera* (1838), *Don Quixote* (1846), and *Robin Hood* (1860). He also essayed the cantata in *Lenore* (1852), and *The Lady of the Lake* (1870); while his oratorios are *St. John the Baptist* (1873), *The Resurrection* (1876), *Joseph* (1877), and *King David* (1883). He also wrote several musical treatises.

Macgillicuddy Reeks (mȧ-gil'i-kud-i), a

picturesque mountain range of Ireland, in the county of Kerry, extending for 13½ miles from the lakes of Killarney on the east to Lough Carra on the west. It is the loftiest mountain range in Ireland; Carrantual, the highest peak, rises 3404 feet above sea-level.

Macgillivray (mak-gil'i-vrā), WILLIAM, born on the island of Harris, Scotland, in 1796; died at Aberdeen in 1852. He was for a time assistant professor of natural history in Edinburgh University, and ultimately became professor of natural history in Marischal College, Aberdeen, in 1841. He was the author of a *Manual of Geology*, a *History of British Quadrupeds*, and an admirable *History of British Birds* (5 vols., 1837-52).

Machette (mȧ-chā'tā), an implement of steel with a wooden handle, originally manufactured for the cutting of sugar-cane, but adopted by the Cubans as a weapon in their encounters with the Spanish troops. The blade is about two feet in length, slightly curved, resembling a pruning-hook on a larger scale. Being exceedingly sharp and heavy in proportion to its size, it formed a terrible weapon.

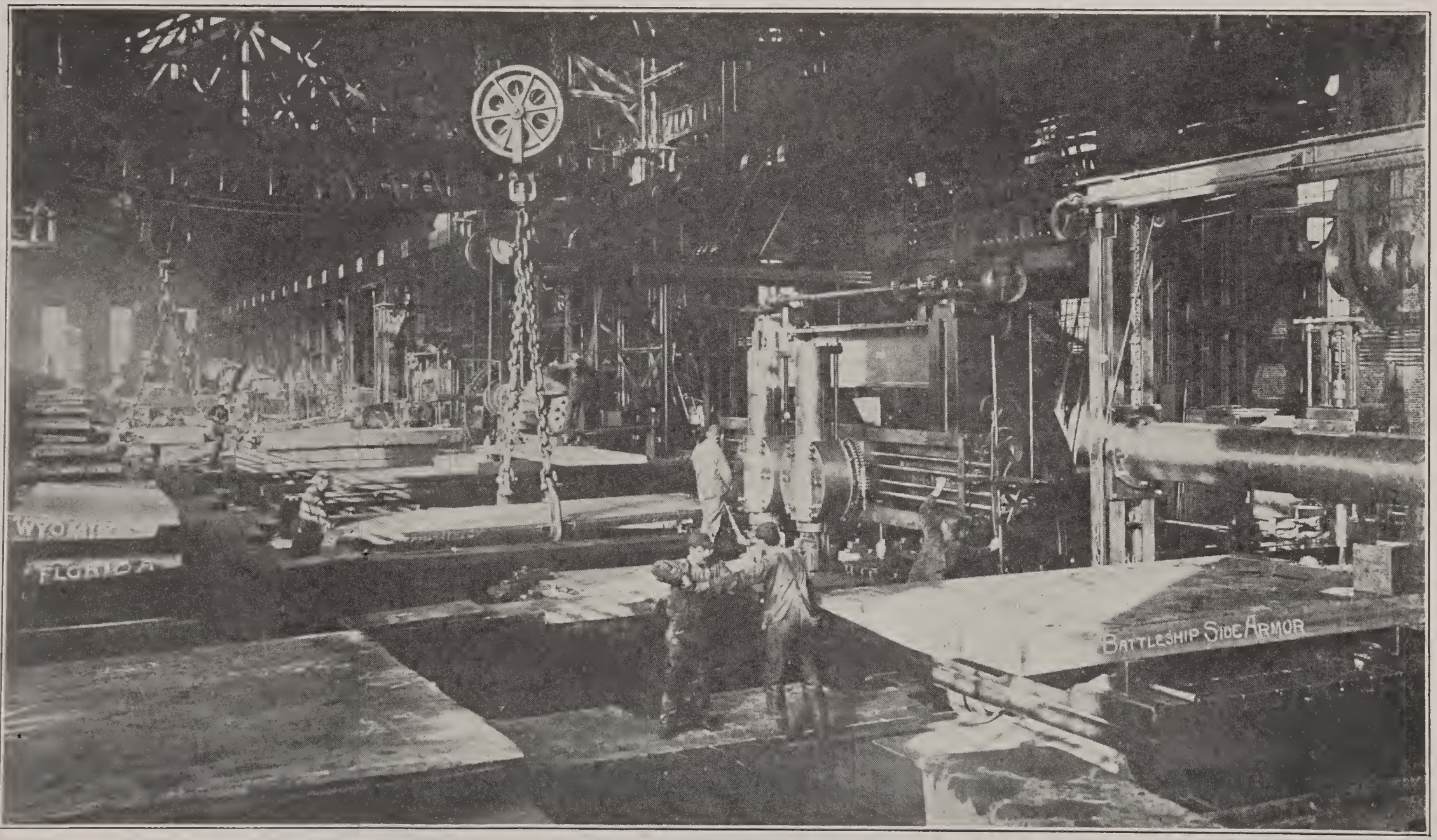
Machiavelli (mȧk-yȧ-vel'lē), NICCOLO, a distinguished Italian statesman and historian, born at Florence in 1469; died in 1527. He became prominent in public affairs in 1498, when he was appointed secretary to the Ten at Florence. For more than fourteen years he guided the destinies of the Florentine Republic, undertook embassies, concluded treaties, and jealously conserved the rights and liberties of his native city. When the Medici returned to power in 1512 by aid of Pope Julius II, Machiavelli was deprived of his office, and imprisoned for his supposed complicity in a plot to overturn the new authority; but being released after a time he retired to his country house of San Casciano. Here he devoted himself to literary labor, the chief results of which are found in his *History of Florence*, embracing the period between 1215 and 1492; *Discourses on Livy; The Prince*, by which he is best known; a military treatise entitled *Dell' Arte della Guerra;* and the comedies of *La Mandragola* and *La Clizia.* The name of Machiavelli was for long synonymous with all that is tortuous and treacherous in state affairs, due to the advice he gave to sovereigns in *The Prince*, but he did no more than advocate the political measures common in his day.

Machine Gun (ma-shēn'), a name given to any of those pieces of ordnance that are loaded and fired mechanically, and can deliver a number of projectiles simultaneously or in rapid succession, having usually a number of separate barrels. The first of these to come into prominence in warfare was the French mitrailleuse, or mitrailleur, which was employed in the Franco-German war. (See *Mitrailleuse.*) The Gatling gun first appeared in the United States, and was speedily adopted by Britain and other powers, with modifications. Other guns of this kind are the Hotchkiss, the Nordenfeldt and the Gardner gun. Such guns, while having their own use in warfare by land, are regarded as being of special value in marine warfare, and are employed largely for use against torpedo boats. The Gardner gun may be mounted in various ways—on a gun-carriage, or on a tripod stand, the legs of which can be screwed down to a ship's deck. The Hotchkiss gun fires heavier projectiles (hollow percussion shells) than the other machine guns, the fire being continuous. It may be described as consisting of a gun-metal frame in which five Whitworth steel barrels revolve with intermittent motion, having a single firing action and cast-iron breech. The barrels become stationary at the moment of firing, loading and extracting the empty cartridges. A more recent machine gun is the Maxim, which, after the first shot is fired by hand power, continues to fire shot after shot by means of the power derived from the explosion of each successive cartridge.

Machine Tools, a name given to various machines constructed to perform operations that otherwise would be done by hand. They include planing machines, drilling machines, punching machines, boring machines, steam hammers, etc.; and some of them are marvels of accuracy and ingenuity.

Mackay (ma-kī'), CHARLES, poet and miscellaneous writer, born at Perth in 1812, and educated in London and Belgium. He was employed on the *Morning Chronicle;* became editor of the *Glasgow Argus;* afterwards he joined the *Illustrated London News.* He represented the *Times* in New York during the Civil war. He published many political and a number of prose works, the *Good Time Coming* being one of his most popular songs. He died in 1899.—His son, GEORGE ERIC, born in 1851, published several volumes of verse, the best known being *The Love Letters of a Violinist.* The popular novelist, MARIE CORELLI, is his step-daughter.

Mackay, JOHN W., capitalist, was born at Dublin, Ireland, in



MAKING ARMOR PLATE

View of the armor plate machine shop at the Bethlehem Steel Company. The varied and complex machining required on armor plate demands tools of enormous size and strength as well as varied purpose. In this shop the different groups of armor are assembled in the position they will occupy on the vessel for which they are intended, and inspected before shipment.

1831. In 1860, after a miner's life in California, he went to Nevada, and in 1872 he was one of the discoverers of the Bonanza mines, of which he owned two-fifths. In 1884, in partnership with James Gordon Bennett, he laid two cables across the Atlantic. He died in 1902.

Mackenzie (ma-ken'zē), SIR ALEXANDER, a Canadian explorer, born at Inverness, Scotland, in 1755; died in 1820. In the employment of the Northwest Fur Company he explored the great river named after him from the western end of Great Slave Lake to the Arctic Ocean (1789). He made another expedition to the western coast (1792), and was the first white man to cross the Rocky Mountains and reach the Pacific coast. He returned to Britain in 1801, and was knighted.

Mackenzie, ALEXANDER, a Canadian statesman, born in Logierait, Perthshire, Scotland, in 1822. Originally a stone mason, he emigrated to Kingston, Canada, in 1842, and began business as a builder and contractor. In 1852 he was editor of a Liberal newspaper, and he entered parliament in 1861, becoming leader of the Liberal party in 1873. On the resignation of Sir John Macdonald that same year he became premier, and retained office with much success till 1878. He more than once declined the honor of knighthood. He died in 1892.

Mackenzie, ALEXANDER CAMPBELL, composer, born at Edinburgh in 1847; received his musical education partly in Germany. He became principal of the Royal Academy of Music in 1888. He is the author of the oratorio, *The Rose of Sharon* (1884), the operas *Colomba* (1884), and *The Troubadour* (1886), the cantata of the *Story of Sayid* (1886), *The Dream of Jubal* (1889), etc.

Mackenzie, SIR GEORGE, a Scottish lawyer, born in 1636; died in 1691. He became king's advocate in 1677, in which capacity his persistent severity towards the covenanters acquired for him the title of 'the Bloody Mackenzie.' The revolution terminated his political career. Besides his *Vindication of the Government of Charles II*, he wrote *Institutions of the Law of Scotland* (1684), *Laws and Customs in Matters Criminal* (1674), and in his *Memoirs* he gives an interesting account of Scotland before the revolution. Sir George Mackenzie was founder of the Advocates' Library in Edinburgh (1682).

Mackenzie, HENRY, a Scottish writer, born in 1745; died in 1831. After being educated at the University of Edinburgh he became an attorney of the Scottish Court of Exchequer. In 1771 he published the work by which he is best known—*The Man of Feeling*, in 1773 *The Man of the World*, and in 1777 *Julia de Roubigné*. These novels, though greatly commended in their day, have long passed out of favor. In 1779-80 he edited *The Mirror*, and from 1785 to 1787 he conducted *The Lounger*, both being the kind of periodical made familiar by Addison's *Spectator*. In 1804 he was appointed comptroller of the taxes for Scotland.

Mackenzie, SIR MORELL, born at Leytonstone, Essex, in 1837; educated at London Medical College, Paris and Vienna; obtained the Jackson prize for diseases of the larynx; became physician to the London Hospital, and lecturer on diseases of the throat. In 1887-88 he was associated with the specialists of Berlin and Vienna in the treatment of the laryngeal disease of the Emperor Frederick of Germany. He was the author of a treatise on *Diseases of the Throat and Nose* and several other works. He died in 1892.

Mackenzie, ROBERT SHELTON, writer and journalist, born in County Limerick, Ireland, in 1809; died in 1881. After doing editorial work on the *Liverpool Journal* and other papers, he settled in the United States in 1852, and became the literary and foreign editor of the Philadelphia *Press*. He wrote *Lays of Palestine; Tressilian, or the Story Tellers; Life of Dickens* and other works.

Mackenzie River, a large river in the Northwest Territories of Canada, which flows out of Great Slave Lake, first west, then north, finally northwest; and after a course of about 1200 miles falls into the Arctic Ocean by numerous mouths. Its principal affluents, including the feeders of Great Slave Lake, are the Athabasca, the Peace, the Liard and the Peel, and it is navigable throughout its course. It was discovered by Alexander Mackenzie in 1789.

Mackerel (mak'e-rel; *Scomber scombrus*), one of the spiny finned fishes (Acanthopteri), a well-known and excellent table fish, which inhabits almost the whole of the European seas and as far south as the Canary Islands, and from Greenland to Cape Cod, on the American coast. The American mackerel is also known as *S. vernalis*. Mackerel, like herring, are caught only when they approach the shore to spawn, nets being chiefly used. The Spanish mackerel *S. colias*, is found from Nova Scotia to Cape Hatteras, but is not much esteemed.

Mackintosh (mak'in-tosh), Sir James, a Scottish historian and philosophical writer, born in 1765; died in 1832. He was educated at Aberdeen and Edinburgh; became a physician; published his *Vindiciæ Gallicæ* in answer to Burke's *Reflections on the French Revolution;* he afterwards quitted the medical profession and was called to the English bar in 1795. By reason of his brilliant lectures on the *Law of Nature and Nations*, and his defense of Peltier, who was prosecuted for a libel on Napoleon Bonaparte, he acquired fame at the bar, and received the honor of knighthood, and in 1804 was appointed recorder of Bombay. After an honorable career in India he returned to England; entered parliament for Nairn, and afterwards for Naresborough; became professor of law at Haileybury College (1818-24), a member of privy council, and in 1830 was made commissioner of Indian affairs.

Macle (mak'l), in mineralogy, a term applied to twin-crystals, which are united in various ways. Macle is also used as a name for chiastolite or crossstone.

MacLean, or Maclean (mak'lān), John, statesman and jurist, was born in Morris Co., New Jersey, in 1785; died in 1861. He was admitted to the bar of Ohio in 1807; was elected to Congress in 1812 and again in 1814; was a judge of the Supreme Court of Ohio, 1816-22, and became Postmaster-General in 1823. He filled this office with much ability until 1829, when he declined a place in the cabinet of President Jackson and was appointed a judge of the Supreme Court of the United States. In 1857 he dissented from the decision of the court in the Dred Scott case. He was one of the Republican candidates for the presidential nomination in 1856, and received 196 votes.

MacLean, Sarah Pratt, novelist, born at Sunsbury, Connecticut, in 1856; married F. L. Green in 1887. Her novel of *Cape Cod Folks* was so strikingly realistic that suit was brought against her by some of the Cape Cod people for libel. She wrote also *Some Other Folks*, *Towhead*, etc.

Macleod (ma-kloud), Fiona, a pen name of William Sharp, who wrote also under his own name. Fiona Macleod being regarded as the real name of an author until recently. Among the works of Sharp under this name are *The Mountain Lovers*, *Green Fire*, *Pharais*, etc.

Mackerel (*Scomber scombrus*).

Maclise (ma-klēz'), Daniel, a celebrated painter of Scottish descent, born at Cork in 1811; died in 1870. He became a student at the Royal Academy in 1828, and began to exhibit in 1829, but it was not until the year 1833 that he established his reputation with his picture of *Snap Apple Night.* Three years after he was elected an associate, and in 1840 he became a full member of the Royal Academy. Maclise was commissioned to paint for the new Houses of Parliament, and produced *The Spirit of Chivalry*, *The Spirit of Religion*, and the two great paintings of *The Meeting of Wellington and Blücher after Waterloo* and *The Death of Nelson* (1858-64). Among his best-known pictures are *Merry Christmas in the Baron's Hall*, *The Ordeal of Touch*, *The Marriage of Strongbow and Eva*, the *Play Scene in Hamlet*, the *Banquet Scene in Macbeth*, etc. His sketches, book illustrations, humorous drawings, and outline portraits were very numerous. He declined the presidency of the Academy in 1866. The works of Maclise show great fertility of invention, skill in composition, and excellence in drawing, but are not distinguished for color.

Macmahon (mak-mȧ-ōṇ), Marie Edmé Patrick Mau-

RICE DE, Duke of Magenta and Marshal of France, born in 1808; educated at the military college of St. Cyr; served with distinction in Algeria; became brigadier-general in 1848; received command of a division during the Crimean war, and assisted in storming the Malakoff; took part in the campaign of 1859 against Austria, and won the battle of Magenta by his prompt handling of the left wing; and after the war became governor general of Algeria. At the outbreak of war between France and Germany (1870) Macmahon was placed in command of the First Army Corps, which was defeated at Weissenburg, Wörth, and finally fell back upon Châlons. Here he rallied his forces, and proceeded northeastward to relieve Bazaine, who was besieged in Metz, but he was pursued by the Germans, shut up by their encircling armies in the town of Sedan, and wounded in the battle before the final surrender. After the armistice with Germany he was employed by the Versailles government in putting down the commune, and in 1873 was president of the republic. He died in 1893.

MacMonnies (mak-mon'ēz), FREDERICK, sculptor, born at Brooklyn, New York, in 1863. His first figure, *Diana*, was exhibited in the Paris Salon of 1889, and in 1896 he was given the French decoration of the Legion of Honor. He made the notable fountains for the Chicago Exposition of 1893, the bronze doors for the Library of Congress, and other highly creditable works.

Macomb (ma-köm'), a city, capital of McDonough Co., Illinois, 59 miles N. E. of Quincy. It has manufactures of earthenware, drainpipes, etc., and contains the Western Illinois State Normal School. Pop. 5774.

Macon (ma'kon), a city, capital of Bibb Co., Georgia, on the Ocmulgee River and the Georgia Central and other railroads, 103 miles S. S. E. of Atlanta. It contains a fine court-house and academy for the blind, etc., also the Mercer University and other educational institutions. Here are iron and brass foundries, machine shops, railroad repair shops, woodworking shops, and large cotton and knitting mills. There is a large trade in cotton. Pop. 40,665.

Macpherson (mak-fer'son), JAMES, a Scottish author, was born in 1738, and died in 1796. He studied at Aberdeen and Edinburgh; became a school teacher, and afterwards a tutor; and in 1760 published *Fragments of Ancient Poetry*, translated from the Gaelic or Erse language. The success of this venture enabled Macpherson to issue the so called poems of *Ossian* in the form of *Fingal*, an ancient epic poem in six books (1762, 4to), and *Temora and other Poems* (1763, 4to). The genuineness of these poetical writings was severely questioned (see *Ossian*), but the 'editor' maintained his position without submitting the necessary proofs. Macpherson was afterwards agent to the Nabob of Arcot; had a seat in the House of Commons from 1780 to 1790, and was interred in Westminster Abbey. He was the author of a prose translation of Homer's *Iliad*, and of some other works.

MacPherson, JAMES BIRDSEYE, general, born in Sandusky Co., Ohio, in 1828. He was graduated at West Point in 1849, was engaged in the engineer corps, was chief engineer under Grant at Donelson and Shiloh, and in May, 1862, was made brigadier-general of volunteers, and major-general in October. He did splendid service at Vicksburg and under Sherman, forced General Johnston to abandon a strong position near Atlanta in July, 1864, and was killed in the battles around Atlanta, July 22, 1864.

Macready (ma-krē'di), WILLIAM CHARLES, English tragedian, born at London in 1793; died at Cheltenham in 1873. His father, the lessee and manager of several provincial theaters, sent him to Rugby and Oxford to be educated, but his circumstances became embarrassed, and the youth had to join his father's company at Birmingham in 1810. Afterwards he played in the provinces with considerable success, and appeared at Covent Garden in 1816. In 1826 he made his first visit to America, and in 1828 played in Paris, with great success in both countries. He undertook the management of Covent Garden in 1837, and Drury Lane in 1842, but although he did much to reform the stage and cultivate the public taste for Shakesperean drama in both theaters (he himself taking the leading parts in Shakespere's plays), his pecuniary losses required him to retire from managership. He revisited the United States in 1849; returned to England; gave a series of farewell performances, and finally retired from the stage in 1851. His *Reminiscences* appeared in 1875. While he was in the United States the rivalry between him and Edwin Forrest led to a serious riot in the streets of New York.

Macrobius (ma-krō'bi-us), AMBROSIUS AURELIUS THEODOSIUS, a Latin author in the reigns of the emperors Honorius and Theodosius (end of fourth and beginning of fifth century

A.D.). He was the author of a work entitled *Saturnalia*, valuable for the light it throws upon the manners and customs of antiquity.

Macrocystis (ma-krō-sis'tus), a genus of marine plants, belonging to the nat. order Algæ. The *M. pyrifĕra* exceeds all other vegetable productions in the length of its fronds, some of which have been estimated on reasonable grounds to attain a length of 700 feet. It is found in the southern temperate zone, and in the Pacific as far north as the Arctic regions.

Macropiper (mak'ro-pi-per), a genus of plants. See *Ava-ava*.

Macropus (mak'ro-pus; Gr. *makros*, long, *pous*, a foot), the generic name of the kangaroos, applied to them in allusion to their elongated hind feet. See *Kangaroo* and *Marsupialia*.

Macrura (ma-kru'ra; Gr. *makros*, long, *oura*, a tail), a family of stalk-eyed decapod crustaceans, including the lobster, prawn, shrimp.

Mactra (mak'tra), a genus of lamellibranchiate molluscs. They live in the sand, and are universally diffused. The genus includes many rare and beautiful species.

MacVeagh (mak'vā), Wayne, statesman, was born at Phoenixville, Pennsylvania, in 1833. He entered the legal profession, was sent to Turkey as United States minister in 1870, and in 1881 was appointed by President Garfield Attorney-General of the United States, but resigned on the accession of President Arthur. He was ambassador to Italy, 1893-97, and chief counsel for the United States in the Venezuela arbitration before The Hague tribunal in 1903.—His brother, Franklin MacVeagh, was graduated in law in 1864, but ill health induced him to abandon practice in favor of a mercantile business. He was nominated by the Democratic party for senator from Illinois in 1894, but was defeated in the legislature. He became vice-president of the American Civic Federation and a member of the executive board of the National Civic Federation, and in 1909 was appointed by President Taft Secretary of the Treasury of the United States.

MacVickar (mak-vik'ar), William Nelson, bishop, was born at New York in 1843. He became a pastor in the Episcopal Church, was rector of Holy Trinity, New York, 1868-75, and of Holy Trinity, Philadelphia, 1875-98, when he was appointed coadjutor bishop of Rhode Island; succeeded as bishop in 1903. He was a very popular orator and preacher, and died in 1910.

Madagascar (mad-a-gas'kar), a large island in the Indian Ocean, 230 miles distant from the east coast of Africa, from which it is separated by Mozambique Channel; length, 975 miles; average breadth, 250 miles; area, about 228,500 square miles; population, about 3,000,000. Madagascar may be described as an elevated region, with an average height of 3000 to 5000 feet, overlooked by mountains rising in some cases to nearly 9000 feet. The coast exhibits a number of indentations, mostly small, and few of them good harbors, it being in great part rock, though in some places low and sandy. On some parts of the coast are numerous lagoons. The rivers are numerous, yet few of them offer even to a moderate extent the advantages of internal navigation. The climate is oppressively hot on the coast, but temperate on the highlands of the interior. The island is unhealthy for Europeans only in the neighborhood of lagoons or marshes. The rainy season continues from December to April. The most striking feature in the vegetation is a belt of dense forest, with an average breadth of 15 to 20 miles, passing round the whole island. It is found at all levels from 6000 feet to the water's edge, and the trees include palms, ebony, mahogany, fig, cocoanut, and the ravinala or traveler's tree (*Urania speciosa*), which when pierced yields a refreshing liquid. The vegetable products grown for food include rice, manioc or cassava, sweet potatoes, groundnuts and yams. Ginger, pepper and indigo grow wild in the woods; cotton, sugar-cane, coffee, tobacco and hemp are cultivated. India-rubber, gum copal and dyewoods are exported. Humped cattle are found in immense herds, and form a large part of the wealth of the inhabitants, as also sheep, goats, swine and horses. The most characteristic of the mammals are the lemurs. The birds are numerous; snakes are rare; crocodiles, lizards, chameleons abound. The inhabitants, called Malagasy, belong to the Malayo-Polynesian stock and speak a Malayan language. They appear to form a single race, though they are divided into numerous tribes, each having a distinctive name and customs. The Hovas are the ruling tribe, they having extended their sway over nearly the whole island, while the other chief tribes are the Betsimasaraka, the Betsileo and the Sakalava. In the coast districts the houses of the better class are built of framed timber with lofty roofs; the dwellings of the lower classes are constructed of bamboo or rushes, or even of clay. The Malagasy show much aptitude

as silversmiths, gunsmiths, carpenters, and with rude looms make handsome cloths. The religion of the great bulk of the people is a kind of fetishism or worship of charms. Many of their superstitious customs have been abolished and Christianity adopted, chiefly by the Hovas, but polygamy and infanticide are still practiced. The island has been held by France since 1895. Imports and exports are valued at $4,000,000 annually. The capital is Antananarivo, in the elevated central region, the towns next in importance being Mojanga, a port on the west, and Tamatave, a port on the east coast.—Madagascar was known to the Greek geographers and the Arabians, and to Marco Polo at the end of the thirteenth century, and in 1506 was visited by the Portuguese, who gave it the name of St. Lorenzo. Towards the end of the seventeenth and during the most of the eighteenth century the French established themselves in the island, but they were only able after a hard struggle to retain the islands of Ste. Marie on the east coast and Nossi-bé on the northwest. In the year 1810 Radama I became king of the Hovas, and with his approval Christian missionaries began to teach in the capital in 1820, many converts were made, the Bible was translated into the Malagasy tongue, the language was first reduced to a systematic written form, and printing was introduced. In 1828 he was succeeded by his chief wife, Ranavalona, a woman of cruel disposition, who persecuted the Christians and closed the island to Europeans. She was succeeded in 1861 by her son, Radama II, who reopened it to the missionaries and emancipated the African slaves. He also granted extensive territories and privileges to France, an act which offended his chiefs and led to his assassination in 1863. His wife occupied the throne five years, and on Ranavalona II becoming queen in 1868, the French brought forward their claims on the Malagasy territory, which, being refused, led to war. This resulted in a treaty (1885) by which the French received Diego Suarez Bay for a naval station, an indemnity of $4,000,000, and the control of foreign relationships. By the Anglo-French agreement of August 5, 1890, the protectorate of France over Madagascar was recognized by Great Britain. A rebellion led to the French conquest of the island in 1895.

Madden (mad'en), Sir Frederick, born at Portsmouth in 1801; died in London in 1873. He early gave himself up to antiquarian pursuits; in 1828 he was appointed assistant keeper of MSS. in the British Museum, and in 1837 head keeper. He was knighted by William IV. He edited a large number of early English works and MSS.

Madder (mad'er), a dye plant, *Rubia tinctōrum*, nat. order Rubiaceæ. It is a climbing perennial, with whorls of dark green leaves, and small yellowish cross-shaped flowers. The prepared root is used as a red dye-stuff. It yields colors of the greatest permanence, and is employed for dyeing both linen and cotton. Two kinds of it are fixed upon cotton; one is simply called *madder-red*, and the other, which possesses a much higher degree of luster and fixity, is called *Turkey* or *Adrianople red*, because it was for a long time obtained entirely from the Levant, where it was called *alizara*. The coloring principle of madder is termed *alizarine*, and as this can now be obtained artificially from coal tar, the use of madder in dyeing is almost entirely superseded by that of artificial alizarine (which see).

Madder Plant.

Madeira (mȧ-dē'rȧ), a Portuguese island in the North Atlantic, 360 miles from the coast of Africa, 530 miles from Lisbon, 1215 from Plymouth; length, 30 miles; breadth, 13 miles; area, about 313 square miles. The island is traversed by a central mountain-ridge, the highest point of which reaches 6000 feet; from this great spurs descend to the coast, forming lofty precipices; and in the bays formed between these volcanic cliffs are situated the villages of Madeira. Adjacent to Madeira is Porto Santo, a small island, and the Desertas, which, with Madeira itself, compose the group of the Madeiras. The staple products of Madeira are wine and sugar; coffee and arrow-root are also grown and a variety of tropical fruits. The wine of Madeira was formerly famous, but a disease of the vines almost ruined the trade. The mean annual temperature is 65°, the two hottest months being August and September, and the three coldest, January, February and March. The climate is equable and the island is considered an excellent sanatorium for chest diseases. The capital and chief center of trade is Funchal. The Madeiras were known to the Romans, and were rediscovered and colonized by

the Portuguese government in 1431. Pop. 150,574.

Madeira, a large navigable river of South America, a tributary of the Amazon, about 800 miles long, formed by the united streams Beni, Mamore, and Guapore on the frontiers of Brazil and Bolivia.

Madeley (mad'e-li), a town of England in Shropshire, on the Severn. Pop. (1911) 8859.

Madero (ma-dā'rō), Francisco Indalecio, President of Mexico, born in 1873. In 1903 Madero came into public notice as a leader of the independent voters of his native state, Coahuila. He established political clubs throughout Mexico and developed a new national party opposed to Diaz. Organizing an uprising in 1910, he forced Diaz to resign. In October, 1911, he was chosen to succeed La Barra, the provisional president.

Madison (mad'i-son), a village of Madison Co., Ill. It has rolling mills, carworks, etc. Pop. 5046.

Madison, a city of Indiana, capital of Jefferson Co., on the Ohio River, 88 miles below Cincinnati. It is a manufacturing city with important industries, including the building of steamboats, engines, boilers, flour, cotton and woolen mills, etc. Pop. 6934.

Madison, a city, capital of the State of Wisconsin, is situated on an isthmus between lakes Mendota and Monona, 75 miles w. of Milwaukee. It has a handsome capitol and the University of Wisconsin, with which is associated the Washburn Observatory. There are also the Wisconsin Academy of Sciences, Arts and Letters, the Geological and Natural History Survey, the State Historical Society, and an asylum for the insane. Its manufactures include foundries, machine shops, carriage shops, agricultural implement works, and various others. Pop. 25,531.

Madison, James, fourth President of the United States, 1809-17, was born in Virginia in 1751; died in 1836. He was educated at Princeton; elected to the Virginia Convention in 1776; became a member of the council of state; took his seat in the Continental Congress in 1780, and was there made chairman of the Committee of Foreign Affairs. He was especially active in the Constitutional Convention of 1787, keeping notes of its proceedings which afterwards became very valuable. He strongly advocated the acceptance of the Constitution by Virginia, and was one of the able writers of *The Federalist*. Under the administration of Jefferson he became Secretary of State, and in 1808 he was elected President, serving for two terms. During his administration war was declared with Great Britain, and was prosecuted for three years with alternate defeat and success, until the decisive battle of New Orleans was fought, and peace signed in 1814. Madison retired into private life in 1817.

Madisonville, a village in Hamilton Co., Ohio, 9 miles N. E. of Cincinnati. It has lumber mills, blanket works, etc. Pop. 5193.

Madness. See *Insanity*.

Madoc (ma'dok), according to a Welsh tradition, son of Owen Gwynned, a Welsh prince, who, in 1170, put to sea with ten ships, and discovered land in the west, supposed to be America. He made a second voyage, but finally was lost to the knowledge of his countrymen. Southey has made Madoc the subject of a poem.

Madonna (ma-don'a), an Italian term of address equivalent to *Madam*. It is given specifically to the Virgin Mary, like Our Lady in English, and hence pictures representing the Virgin are generally called *madonnas*.

Madoqua (mad'o-kwa), a very tiny antelope of Abyssinia (*Antilŏpe saltiāna* or *Neotrăgus saltiāna*), about as large as a good-sized hare, and with very slender legs.

Madras (ma-dras'), a maritime city of British India, capital of the presidency of the same name, on the Coromandel coast. It is ill situated for commerce, standing on an open surf-broken shore with no proper harbor, though an area has recently been enclosed by piers so as to shelter a certain amount of shipping. Still it carries on an extensive commerce, being the terminus of railways from Bombay and the south, while it is also the headquarters of all the presidency departments. The town is disappointing in appearance, the site being flat and there being no handsome streets, though there are some good buildings. Altogether the municipality covers an area of 27 square miles, the native and business part being called the Black Town. The chief objects of interest are the citadel of Fort St. George, built in 1639, the cathedral of St. George, Scotch church, government house, senate house, revenue buildings, college, etc. There are no manufactures to speak of, but the export and import trade is large. Madras was founded in 1639 by the English, and soon became their chief settlement on the coast. Pop. 562,191.

Madras, Presidency of, includes with its dependencies and the state

of Mysore the entire south of the peninsula of India. Its extreme length is 950 miles, breadth 450 miles; area, 141,726 square miles, the native states included covering 9969 more. It is surrounded on every side except the north by the sea, on which side it is bounded by Orissa, the Central Provinces, the territory of Hyderabad and Mysore. The three chief rivers, Godavari, Krishna and Kaveri, rise in the Western Ghâts and enter the Bay of Bengal. The climate is varied: in the Nilgiri Hills it is temperate, on the Malabar coast the monsoon brings an excessive rainfall, while in the central tableland the rainfall is low, and the heat almost unendurable. The soil is sandy along the coast, but there are many fertile districts; while iron, copper, lead and coal are found in considerable quantities. There are extensive forests in the presidency, yielding teak, ebony, and other valuable timber trees. The principal vegetable products are rice, wheat, barley, maize, and other grains; sugar-cane, areca, yam, plantain, tamarind, jackfruit, mango, melons, cocoanuts, ginger, turmeric, pepper, tobacco, oil seeds, coffee and cotton. The wild animals met with are the elephant, tiger, chetah, jackal, wild hog, etc. The Madras administrative authority is vested in a governor, with a council of three members appointed by the queen, and of whom one is the commander-in-chief. For legislative purposes the council is increased by nominations of the governor. The chief educational institution is the Madras University, an examining body granting degrees in arts, law, medicine and engineering. The population is 41,693,882, and the native protected states have in addition a population of 4,188,088. The chief languages spoken are the Dravidian, namely, Tamil, Telugu (which are spoken by the great majority of the inhabitants), Canarese and Malayalam, while Hindustani is the language spoken by the Mohammedans.

Madrepore (mad're-pōr), a coral-building polyp of the genus *Madrepŏra*, the type of the family Madreporidæ, forming coral of stony hardness and of a spreading or branching form, hence called *tree-coral*. Madrepore coral is of a white color wrinkled on the surface and full of little cavities, in each of which an individual polyp is lodged. These polyps raise up walls and reefs of coral rocks with astonishing rapidity in tropical climates. The term is often applied also to other branching corals.

Madrid (mà-*drid'*), the capital of Spain, in New Castile, in the province of Madrid, on the Manzanares, near the center of the Iberian Peninsula. Situated upon a high plateau, 2450 feet above the sea, windswept from the snowy Guadarrama, with unhealthy extremes of temperature, the city has no advantages except the fanciful geographical merit of being the center of Spain. The principal streets are broad, long and airy; but the squares are generally irregularly built and deficient in decorative monuments. The royal palace, a combination of Ionic and Doric architecture, is one of the most magnificent in the world, being 470 feet each way, and 100 feet high. It contains a small but splendid Corinthian chapel, a library of nearly 100,000 volumes, and a fine collection of ancient armor and coins. Madrid has no cathedral, being only a suffragan bishopric of Toledo, and the churches are few and uninteresting. The bull fights take place in the Plaza de Toros (bull ring), a building which is about 1100 feet in circumference, and capable of containing 12,000 spectators. The Prado, nearly two miles long, a boulevard on the east of the city, forms the popular promenade, and beyond it is the park. The Royal Museum of Painting and Sculpture, in the Prado, contains more than 2000 pictures. The National Library, founded by Philip V, contains 230,000 volumes. The University has an average attendance of 5000 students, and there are numerous colleges and schools, medical, military, law, etc. The manufactures are of small importance. Madrid only began to be a place of importance under Charles V, and in 1560 Philip II declared it to be the capital. It has not increased much since the reign of Philip IV. Pop. 539,835.

Madrigal (mad'ri-gal), a short amorous poem, consisting of not less than three or four stanzas or strophes, and containing some tender and delicate, though simple thought, suitably expressed. The madrigal was first cultivated in Italy, and those of Tasso are among the finest specimens of Italian poetry. Several English poets of the time of Elizabeth and the Charleses wrote madrigals of notable grace and elegance, the chief names being Lodge, Withers, Carew and Suckling.—The term is also applied to an elaborate vocal composition now commonly of two or more movements, and in five or six parts. The musical madrigal was at first a simple song, but afterwards was suited to an instrumental accompaniment. There are a number of famous English composers of madrigals.

Madstone (mad'stōn), a stone about the shape and size of a hen's egg, which is kept by some super-

stitious people of the United States with the belief that it will absorb snake venom and cure hydrophobia.

Madura (ma-dö′ra), a district of India forming part of the Madras presidency, mostly a plain drained by the Vaïgai River; skirted on the southwest by the Travancore Hills; area, 8701 square miles; pop. 2,831,280. The capital of the same name contains the vast palace of the ancient rajahs, now going to decay, and the Great Temple, one of the most remarkable monuments of Hindu architecture. The chief buildings of Madura are connected with the name of Tirumala Nâyak, who reigned from 1623 to 1659. Near the town is a remarkable eminence, called, from its shape, the Elephant Rock. The town has been much improved under British rule. Pop. 105,984.

Madura, an island of the Indian Archipelago, N. E. of Java, and separated from it by the Strait of Madura; 105 miles long, and 30 miles broad; and belonging to the Dutch. The island is not very fertile. The inhabitants, mostly Mohammedan, are governed by native princes. Cattle rearing is the chief industry, while the chief products are maize, cocoanuts, tobacco, Jamaica pepper and tamarinds. The principal town is Sumanap. Pop. 1,652,580.

Madvig (mad′vig), Johan Nikolai, a Danish scholar, born in 1804; died in 1886; long professor of Latin in the University of Copenhagen. He is best known by his excellent Latin grammar translated into most European tongues.

Mæander (mē-an′dėr), now Meinder, a river of Asia Minor, which enters the Ægean. It was celebrated among the ancients for its winding course, and has given us the verb to *meander*.

Mæcenas (mē-sē′nas), Caius Cilnius, a distinguished Roman, born between 73 and 63 B.C.; died in 8 B.C. He was the companion of the Emperor Augustus in nearly all his campaigns, and his most trustworthy counselor in political matters. For the three years 18-15 B.C. he was invested with the government of Italy. His great glory, however, was as a patron of learning, and the friend of Virgil and Horace.

Maelar (mē′lar), a beautiful lake of Sweden, length about 75 miles; average breadth 12 miles; irregularly formed and dotted with innumerable islands. Stockholm is situated at its exit to the Baltic.

Maelstrom (māl′strom), a celebrated whirlpool off the coast of Norway, near the island of Moskoe, one of the Lofoden Islands. When a strong wind is blowing from the northwest the whirlpool rages violently, sufficiently so as to be heard several miles away, and to engulf small vessels which approach the eddying waters too nearly.

Mæotis. See *Azof, Sea of.*

Maestoso (ma-es-tō′sō), an Italian musical term meaning in a majestic or lofty style.

Maestricht, or Maastricht (mäs′-trih*t*; Latin, *Trajectus ad Mosam*), a town of Holland, capital of the province of Limburg, on the left bank of the Maas. It lies on the Belgian frontier, 56 miles east of Brussels, and 52 miles west by south of Cologne. Among the chief buildings are the church of St. Servaas, dating from the tenth century; another old church, and the town hall (Stadhuis). Maesthricht was once one of the strongest fortresses in Europe. Pop. 34,399.

Maeterlinck (mā′ter-link), Maurice, a Belgian dramatist, born at Ghent in 1864. He has been called the 'Belgian Shakespere,' and won reputation by *Le Princesse Maleine* (1890). This was followed by other plays, essays, etc.

Maffia (ma′fi-a), La, a secret society originating in Sicily, having for its aim the substitution of its own laws for that of the state. Branches have been formed in the United States, where their members are suspected of fomenting atrocious crimes. The chief of police of New Orleans, La., was murdered by the Maffia in 1890. On the acquittal of the accused, a mob broke into the jail and lynched eleven of them, an outrage which led to a diplomatic controversy with Italy.

Mafra (mä′fra), a town of Portugal, province of Estremadura, 17 miles northwest of Lisbon, and near the coast. It is noticeable only for the magnificent building, erected here by John V in 1717, in imitation of the Escurial of Spain, which forms a quadrangle, measuring east to west 760 feet, and north to south 670 feet, and includes a church, a royal palace, a college with a library of about 50,000 volumes, and a monastery with 300 cells. Pop. 4769.

Magadoxo (mȧ-gȧ-dō′shō), Mogdisha or Mogdishu, a seaport on the east coast of Africa, lat. 2° N., with a considerable trade. Magadoxo is subject to the Sultan of Zanzibar, but its administration has been handed over to the Imperial British East African Co. Pop. 6000.

Magalhaens (mȧ-gȧl-yȧ'ens), or MAGELLAN (ma-jel'-an), FERNANDO DE, a Portuguese navigator, who conducted the first expedition round the world. Born about 1470 he served under Albuquerque in the East Indies; distinguished himself at the taking of Malacca in 1511; in 1519 received the command of a fleet of five ships from Charles V of Spain, with which he sailed westward; entered the strait since called after his name, and discovered the Pacific Ocean. Crossing this ocean, he was killed in a skirmish with the natives on one of the Philippines, but one of his vessels was brought to Spain by Juan Sebastian del Cano, thus completing the circumnavigation.

Magazines. See *Periodicals.*

Magazine Guns, a term applied to that class of small arms which carry extra cartridges. These have come into general use within recent years for sportsmen and soldiers, and include various inventions for feeding the extra cartridges and ejecting the empty shells.

Magdala (mäg'da-lä), a town and fortress of Abyssinia, nearly 9000 feet above the level of the sea, about 120 miles southeast of Gondar. Magdala acquired importance from having been stormed April 12, 1868, by the British troops. See *Abyssinia.*

Magdalen (mag'da-len), or MAGDALENE, MARY, that is, Mary of Magdăla, a woman mentioned in the New Testament as having had seven devils cast out of her, as watching the crucifixion, and as having come early to the sepulcher on the resurrection morning. She was erroneously identified as the 'woman who was a sinner' (Luke, vii, 37), and hence the term Magdalen came to be equivalent to a penitent fallen woman.

Magdalena (mag-da-lē'na), a large river of South America which rises in the central Cordillera of the Andes, in Ecuador; flows generally north through Colombia, and falls into the Caribbean Sea by several mouths; length 970 miles. The Magdalena is navigable as far as Honda, 435 miles from its embouchure.

Magdalen Institutions (see *Magdalen*) are intended to afford a retreat to penitent prostitutes, and the first was established in London, in 1758.

Magdeburg (mȧh'dė-burh), the capital of Prussian Saxony, and a fortress of the first class, on the Elbe, 76 miles W. S. W. of Berlin, chiefly on the left bank of the river, which here divides into three arms. The chief buildings are the Dom or cathedral, erected in the thirteenth and fourteenth centuries, and repaired in recent times; the town house, government buildings, exchange, central railway station and theater. The industries are very varied, embracing machinery, castings, armor plates, chemicals, spirits, pottery, sugar, beer, cottons, ribbons, leather, etc. The trade is extensive both by rail and river; for sugar Magdeburg is the chief center in Germany. Magdeburg is a place of great antiquity, being a trading center in the ninth century. It early distinguished itself in the Reformation. During the Thirty Years' war the town was besieged, stormed, and sacked by Tilly, when 20,000 persons are said to have been murdered. Pop. (1910) 279,685.

Magdeburg Hemispheres. These are two hollow hemispheres of copper or brass, fitting accurately, and arranged so that the air can be withdrawn from them and a vacuum formed within. When thus exhausted they cling together with great force. If a foot in diameter, the pressure upon them amounts to nearly a ton.

Magellan. See *Magalhaens.*

Magellan (ma-jel'lan), STRAIT OF, separates the continent of South America from Tierra del Fuego, 300 miles long; varies in breadth from 5 to 50 miles, and forms communication between the South Atlantic and South Pacific oceans. The number of obstructing islands makes the channel difficult of navigation. The strait was discovered in 1520 by Fernando de Magalhaens, or Magellan, during his celebrated voyage.

Magellanic Clouds (ma-jel-lan'-ik), two oval-shaped cloud-like masses of light in the southern hemisphere near the pole, consisting of swarms of stars, clusters and nebulæ of every description. They cover spaces in the heavens of 42 and 10 square degrees respectively.

Magendie (mȧ-zhaṇ-dē), FRANÇOIS, a French physiologist, born in 1783; died in 1855. Educated for the medical profession in Paris, he was made demonstrator of anatomy by Boyer; became physician to the Hôtel-Dieu; was elected a member of the Academy of Sciences in 1819; and in 1831 received the anatomy professorship in the College of France. By his extensive use of vivisection he made important discoveries in physiology, and he published important works.

Magenta (mȧ-jen′tȧ), a small town of North Italy, 14 miles east from Milan, on the high road to Novara. On June 4, 1859, Magenta was the scene of a decisive victory won by the French and Sardinians over the Austrians, and it, in consequence, gave the title of Duke of Magenta to Marshal Macmahon. Pop. 8012.

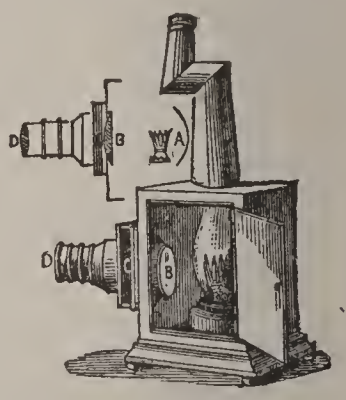
Magenta, a brilliant blue-red coloring substance derived from aniline.

Maggiore, Lake. See *Lago Maggiore.*

Magi (mā′jī), the hereditary priests among the Medes and Persians, set apart to manage the sacred rites, and preserve and propagate the sacred traditions, acting also as diviners and astrologers. They possessed great influence both in public and private affairs, conducted the education of the princes, etc. Their order was reformed by Zoroaster. (See *Zoroaster.*) The name came also to be applied to holy men or sages in the East.

Magic (maj′ik), the art or pretended art or practice of producing wonderful effects by the aid of superhuman beings or of departed spirits or the occult powers of nature. The word is used to include a mass of beliefs and practices which bear on matters beyond the ordinary known actions of cause and effect. A large proportion of magical rites are connected with the religious beliefs of those using them, their efficacy being ascribed to supernatural beings. There is, however, a non-spiritual element in magic which depends on certain imagined powers and correspondences in nature, that can be utilized in various ways. (See *Alchemy, Astrology, Charm, Divination, Witchcraft.*) In savage countries the native magician is often sorcerer and priest, and sometimes chief of the tribe. Among the ancient Egyptians magic was worked into an elaborate system and ritual, and it was regularly practiced among the Babylonians and Assyrians, as well as in Greece and Rome. Alexandria, from the second to the fourth century, became the headquarters of theurgic magic, in which invocations, sacrifices, diagrams, talismans, etc., were systematically employed. This system, influenced by Jewish magical speculation, had a strong hold in mediæval Europe, and many distinguished names are found among its students and professors. The magic which holds a place still among the illiterate and ignorant classes has come down by tradition in popular folk-lore. The name *natural magic* has been given to the art of applying natural causes to produce surprising effects. It includes the art of performing tricks and exhibiting illusions by means of apparatus, the performances of automaton figures, etc. See *Legerdemain.*

Magic Lantern, a kind of lantern invented by Kircher, a German Jesuit (1604-80), by means of which small pictures or figures are represented on the wall of a dark room or on a white sheet, magnified to any size at pleasure. It consists of a closed lantern or box, in which are placed a lamp and a concave mirror (as at A), which reflects the light of the lamp through the small hole of a tube in the side of the lantern, which is made to draw out. At the end of this tube, next to the lamp, is fixed a plano-convex lens (B), and at the other a double-convex lens (D). Between the two lenses are successively placed (at C) various slips of glass, with transparent paintings, representing various subjects, which are thrown in a magnified form on the wall or screen opposite to the lantern and spectators. It has been vastly improved of late, and the substitution of the oxyhydrogen and electric lights for the oil lamp has added much to the effectiveness of its displays; while photography applied to the production of objects has almost indefinitely increased its resources.



Magic Lantern.

Magic Square, is a term applied to a series of numbers in arithmetical progression, arranged in equal and parallel rows and columns, in such a manner that the vertical, horizontal and diagonal columns when added shall give the same sums. The question of magic squares is in itself of no use, yet it possesses a curious interest to those interested in the properties of numbers. A specimen of these squares is here given. There are also *Magic Circles, Magic Cubes, Magic Cylinders, Magic Spheres,* etc., in all of which the same result is brought about by various arrangements of the terms of an arithmetical series.

2	7	6
9	5	1
4	3	8

Magic Square.

Magilp (ma-gilp′), a gelatinous compound produced by mixing linseed oil and mastic varnish together, used by artists as a vehicle in oil paint-

ing. The proportions vary according to the work. It is thinned with turpentine.

Maginn (ma-gin′), WILLIAM, born at Cork in 1794; died at Walton-on-Thames in 1842. He was educated at Trinity College, Dublin, and established himself as a literary man in London. He was for long a regular contributor to *Blackwood's Magazine*, and was successively editor of the *Standard*, of *Frazer's Magazine*, and other publications. Notwithstanding his splendid scholarship and talent for popular writing, his irregular habits brought him to bankruptcy and a debtor's prison. His *Homeric Ballads*, *Shakespere Papers*, etc., were collected and published after his death.

Magione (mȧ-ji-ō′nā), a town of Central Italy, 8 miles w. s. w. of Perugia. Pop. 6980.

Magistrate (maj′is-trāt), a public civil officer invested with the executive government or some branch of it. In this sense a king is the highest or first magistrate in a monarchy, as is the president in a republic. But the word is more particularly applied to subordinate officers, to whom the executive power of the law is committed, either wholly or in part, as governors, intendants, prefects, mayors, justices of the peace, and the like.

Magna Charta Libertatum, the Great Charter of Liberties, a document forming part of the English constitution, and regarded as one of the mainstays of English liberty, extorted from King John by the confederated barons in 1215. Its most important articles are those which provide that no freeman shall be taken, or imprisoned, or proceeded against except by the lawful judgment of his peers or by the law of the land; and that no scutage or aid shall be imposed in the kingdom (except certain feudal dues from tenants of the crown), unless by the common council of the kingdom. The remaining and greater part of the charter is directed against abuses of the king's power as feudal superior. It originally contained sixty-three clauses; subsequent confirmations altered the number of these till 1225, when it took its final and accepted form with thirty-seven clauses. The most accurate and complete copy of the original charter is that preserved in Lincoln Cathedral. The board of commissioners on the public records ordered a facsimile of it to be engraved, and it has been frequently translated from its original Latin into English.

Magna Græcia (mag′na grē′sha), the collective name given to the Greek cities and settlements in Southern Italy mostly founded in the eighth century B.C. by different Greek peoples. The Chalcidians founded Rhegium about 730 B.C.; and subsequently Croton, Sybaris, Tarentum, etc., were founded. These colonies and their offshoots reached a great pitch of wealth and power in the seventh and sixth centuries B.C. Mutual discord, however, gradually weakened them, and their independent existence came to an end in the third century B.C., when they were conquered by the Romans.

Magnesia (mag-nē′shi-a), the name of two ancient cities of Asia Minor: (1) A city of Ionia on the river Lethæus, a tributary of the Mæander. (2) A town of Lydia on the southern bank of the Hermus. See *Manisa*.

Magnesia, a white tasteless earthy substance, possessing alkaline properties, and having a specific gravity of 2.3. It is absorbent, antacid, mildly cathartic, and almost insoluble. It is found native in the state of hydrate and carbonate, and exists as a component part of several minerals. In commerce, pure magnesia is generally distinguished by the term *calcined magnesia*, and is readily obtained by exposing its hydrated carbonate to a red heat. The hydrated carbonate goes by the name of *magnesia* or *magnesia alba*. The chief use of magnesia and its carbonate is in medicine. See *Magnesium*.

Magnesian Limestone (mag-nē′shi-an), a yellowish rock composed of carbonates of lime and magnesia, the latter amounting in some cases to nearly a half. There are several varieties, more or less useful for building or ornamental purposes, which are included under the generic name dolomite. The same name is also given to the whole Permian formation, from this rock being very largely developed in it.

Magnesium, the metallic base of magnesia; chemical symbol Mg, atomic weight 24.5. It may be obtained by decomposing chloride of magnesium by means of potassium. It is of a white color like silver; its luster is metallic and brilliant; it is very malleable, and fuses at a red heat. Heated to redness in oxygen gas, it burns with brilliancy, and combining with oxygen becomes magnesia, or the oxide of magnesium (MgO). The magnesium light is rich in chemical rays, and is now employed to some extent in photography. The chief salts are the carbonate, the chloride, the sulphate (Epsom salt), the phosphates and the silicates, among

which are such minerals as chrysolite, meerschaum, soapstone and serpentine.

Magnet. See *Magnetism.*

Magnetic Lift, an arrangement now much used for lifting heavy weights by the aid of powerful artificial magnets. These are adapted to form part of a traveling crane, strong magnets, energized by powerful currents of electricity, being employed. These will lift and carry iron masses of considerable weight, consisting of detached parts, yet all lifted together by the magnetic force. They can be dropped at any desired point by breaking the current, when the magnetic power ceases. Thus work can be quickly done which would require considerable time and labor in loading and carrying in the ordinary way. A notable example was given in the case of a sunken ship at New Orleans laden with kegs of nails. These were lifted from a considerable depth of water by the use of a magnet, the nails coming up in a coherent mass in instances where the kegs had been broken.

Magnetism (mag'net-izm), the science which treats of the phenomena exhibited by magnets—phenomena due to one of those forces which, like electricity and heat, are known only by their effects. The phenomena of magnetism were first observed in the loadstone or *magnet* (so named from Magnesia in Asia Minor). The loadstone is a kind of iron ore (magnetic iron ore), and is found in many parts of the world, especially in the Scandinavian peninsula and in Siberia. It has the power of attracting small pieces of iron or steel, and when suspended in such a way as to be able to move freely, always points to what are called the magnetic poles of the earth, that is, nearly north and south. A piece of loadstone forms a *natural magnet*, and has the further remarkable power of giving all its own properties to hard iron or steel when these bodies are rubbed by it. A bar or mass of iron or steel to which the peculiar properties of a natural magnet have been imparted by friction from other magnets or by electric *induetion* is called an *artifieial magnet.* When freely suspended, all magnets, natural and artificial, rest with their lengths in a northerly and southerly direction, and this property is utilized in the well-known compass. They attract iron and other magnetic substances with a force increasing from the middle of the magnet to its extremities, which are called its *poles.* The magnetism at the two poles is different, that pole which points to the north is distinguished as the north or north-seeking or austral pole, or by the sign plus (+); that which points to the south as the south or south-seeking or boreal pole, or by the sign minus (—). The poles of the same denomination repel each other, while those of different names have mutual attraction, thus resembling the two electricities, positive and negative. The intensity of this attraction and repulsion varies inversely as the square of the distance, a law which also governs electrified bodies. Magnetism pervades the earth as electricity does the atmosphere. It assumes a totally different form in different substances; the metals iron, nickel and cobalt being strongly attracted by the magnet; others such as bismuth, copper, silver, gold, etc., being repelled. (See *Diamagnetic.*) Whether or not this is an actual repulsion, however, is in doubt, as it may be due to the superior magnetic power of oxygen, which in its response to magnetism may force these feebler substances away. The space in the neighborhood of a magnet is called the *magnetic field;* a piece of soft iron brought into this space becomes magnetic, but it loses its magnetism as rapidly on removal from the field. (See *Induetion, Magnetic.*) Steel has *coercive force,* in virtue of which it requires time for magnetization, and retains its magnetism on removal from the field. Hard steel may be made magnetic by rubbing it several times in the same direction with a powerful magnet, and hence it is easy to multiply magnets. The most powerful permanent magnets are produced by rubbing bars of steel on electromagnets (see *Eleetro-magnetism*), or by moving them backwards and forwards along the axis of a coil of wire in which an electric current is passing. A bar is magnetized to saturation when its magnetism is as great as it can retain without future sensible loss. When a magnet is broken into a number of pieces each piece is found to be magnetic, and its north pole is found to have been directed towards the north pole of the unbroken magnet. When these pieces are put together again poles placed in contact nullify each other, and the original magnet is reproduced. From this fact it has been suggested that magnetism is an affection of the particles which make up the magnet. Ampere having advanced the theory that every atom is a natural magnet and that when these act in unison the whole mass displays magnetic force.

Terrestrial magnetism, which pervades the whole earth, is extremely complicated.

It becomes manifest by its influence on the magnetic needle, varying with time and place over the earth. One pole of the needle points towards the north, the other towards the south. There are, however, only two lines on the surface of the earth on which it points directly north and south, and where the magnetic and geographical meridians appear to coincide. Elsewhere the needle deviates more or less from the true north. This is termed the declination of the needle, and varies from place to place, and in the course of time at the same place. (See *Isogonic.*) When a needle is balanced on a horizontal axis so that it can turn in a vertical plane, the extremity attracted by the nearer magnetic pole of the earth points more or less downwards. (See *Dipping-needle.*) The angle thus made is called the dip or inclination, and the lines marking equal inclinations on a map are called *isoclinal* lines. They intersect the isogonal lines, and the dip increases towards the perpendicular as the magnetic poles are neared. These magnetic poles do not coincide with the geographical poles, the northern being in 70° 5′ N. and 96° 43′ W. The southern was located by the Shackleton expedition of 1908, in lat. 72° 23′ S. and lon. 154° E. There are two foci of maximum force in the northern hemisphere and two in the southern. In the northern hemisphere the stronger focus is assumed to be in 52° N. and 90° W., and the weaker in 70° N. and 115° E. In the southern hemisphere the stronger focus is assumed to be in 65° S. and 140° E., and the weaker probably in 50° S. and 130° E. The earth's magnetism is subject to vast unaccountable commotions or storms of immense extent, which occur at irregular intervals and are of short duration. They are often connected with manifestations of electrical phenomena, such as the aurora borealis, or thunder storms. These disturbances are made manifest by irregular motions of the magnetic needle. The various phenomena connected with terrestrial magnetism are now automatically recorded, and systematized in the interests of meteorology. The magnetic equator or line of no dip crosses the terrestrial equator in several places, extending alternately on each side, but never deviating more than 12° from it.

Magnetism, ANIMAL. See *Mesmerism.*

Magneto-electricity (mag′ne-tō), treats of the currents of electricity produced in a conductor when its position is changed relatively to a magnetic field (see *Induced Current*), whereas electro-magnetism (which see) treats of magnetization produced by currents.

Magneto-electric Machines.

In magneto-electric machines an electro-magnet of compact form called the armature is caused to rotate near the poles of a powerful fixed magnet, in such a manner that the core of the armature becomes magnetized first in one direction and then in the opposite, by the inductive action of the poles of the fixed magnet. Every change in the magnetization of the core induces a current in the coil wound upon it. Hence currents in alternately opposite directions are excited in this coil, their strength increasing with the speed of rotation. It is now usual in powerful machines of this class to employ electro-magnets as the fixed magnets, and the current which feeds these fixed magnets (called the *field magnets*) is often the current generated by the machine itself. The machines in this case are called dynamo machines. This name was originally confined to machines which thus supply the current for their own field magnets; but it is now applied to any machine in which the field magnets are electro-magnets. Such machines, of which there is an enormous variety, driven by steam engines or other powerful motors, are now almost universally employed when electric currents are required on a large scale, as in electric lighting. See the articles *Dynamo, Electric Light, Electro-magnet, Electro-magnetism, Electro-motors.*

Magnetometer (mag-net-om′e-tėr), an instrument employed for observing the magnetic declination, and also for other absolute magnetic measurements. They are of various forms and are usually self-recording. See *Declinometer, Dipping-needle.*

Magnificat (mag-nif′i-kat), the song of the Virgin Mary, Luke, i, 46-55; so called because it commences with this word in the Latin Vulgate. It is sung throughout the Western Church at vespers or evensong.

Magnifying-glass, a convex glass. See *Lens.*

Magnolia (mag-nō′li-a), a genus of trees and shrubs, type of the nat. order Magnoliaceæ; named from *Pierre Magnol*, a French botanist of the seventeenth century. The species, which chiefly inhabit North America, Northern India, China, Japan, and other parts of Asia, are trees much admired on account of the elegance of their flowers and foliage, and are in great request in gardens. In their native countries some of them attain great height, and have flow-

ers 10 inches across. The bark of the root of *M. glauca*, or the beaver tree, is an important tonic. *M. tripetăla*, or umbrella tree, has also tonic properties. The cones of *M. acuminăta* yield a spirituous liquor, employed in Virginia in rheumatic affections. *M. grandiflōra*, or big-laurel, and *M. conspicua* or *Yulan*, the yulan or Chinese magnolia, grow well in the south of England, and are splendid ornamental trees, being notable from flowering in spring before the leaves expand. The great flowered magnolia, or laurel bay, is a fine evergreen tree, 70 feet high, found in America, and bearing large, fragrant and beautiful flowers.

Magog. See *Gog and Magog.*

Magot. See *Barbary Ape.*

Magpie (mag′pī), a bird of the genus Pica, belonging to the Corvidæ or crow family. There are several species, two of which belong to America. The common European magpie (*P. caudāta*) is about 18 inches in length; the plumage is black and white, the black glossed with green and purple; the bill is stout, and the tail is very long, whence its specific name *caudāta*. The magpies continue in pairs throughout the year, and prey on a variety of food, chiefly animal. They are determined robbers of other birds' nests, destroying the eggs and young birds. In captivity they are celebrated for their crafty instincts, their power of imitating words, and their propensity to purloin and secrete glittering articles.

Magyars (ma-jârz′), the Hungarians. See *Hungary.*

Mahaban (ma-ha-ban′), a decayed Indian town and place of pilgrimage, in Muttra district, Northwestern Provinces. Pop. 6182.

Mahâbhârata (ma-ha-bâ′ra-ta; literally, the great history of the descendants of Bharata), an ancient Indian epic of about 220,000 lines, divided into eight books, the leading story of which narrates the history of the war between the 100 sons of Dhritarāshtra and their cousins, the five sons of Pāndu, for the possession of the ancient kingdom of Bharata, which is said to have comprised the greater part of India. With its numerous extensive digressions and episodes, it forms a cyclopædia of Hindu mythology, legendary history and philosophy. The authorship is attributed to Vyâsa, 'the arranger,' but this simply means that the materials of which the poem consists were at some time or other welded together with a certain order and sequence so as to form one work, containing all that was needed to be known by an educated Hindu.

Mahadeva (ma-hâ-dā′va; Skr.; literally, the great god), a name of Siva, one of the Indian deities, from which the sacred Ganges is fabled to have sprung.

Mahaffy (ma-haf′fi), JOHN PENTLAND, born in Switzerland in 1839; educated in Germany and latterly at Trinity College, Dublin, where he became a fellow in 1864, and was appointed professor of ancient history in 1871. He is author of *Lectures on Primitive Civilization; Social Life in Greece from Homer to Menander; History of Classical Greek Literature; Problems of Greek History*, etc.

Mahan (ma-han′), ALFRED THAYER, naval officer and author, was born at West Point, New York, in 1840. Graduating from the Naval Academy in 1852, he served through the Civil war and until 1896, retiring with the rank of captain. His notable work, *The Influence of Sea Power upon History*, attracted wide attention. He has since written other interesting works, as *From Sail to Steam*, and *Naval Administration and Warfare*. His legal retirement took place in 1906, when he was given the rank of rear-admiral.

Mahânadi River (m*a*-hä′n*a*-dē; or MAHANUDDY), a river in Southern Hindustan which flows through the Central Provinces and Orissa, falling by several mouths into the Bay of Bengal, after a course of 520 miles. It has several large tributaries, and in connection with it is an extensive canal system, capable, when completed, of irrigating an area of 1,600,000 acres. During the rains the river is navigable for 300 miles from its delta.

Mahanoy City (mä-ha-noi′), a city of Schuylkill Co., Pennsylvania, 80 miles from Philadelphia, 13 miles N. N. E. of Pottsville, in the middle of a rich anthracite coal district. It has iron and other industries. Pop. 15,936.

Maharajah (ma-hâ-râ′ja; literally, a great king), a title applied in courtesy to every Indian rajah, or to any person of high rank or deemed holy.

Mahatma (ma-hât′ma). This word signifies in Sanskrit 'great-souled one.' It is used by the Brahmans to designate a sage who has attained the highest point of spiritual enlightenment, and is in consequence possessed of magical powers.

Mahdi (mä′dē; Arabic, the director or leader), a name assumed by

some of the successors of Mohammed, particularly applied to the twelfth imam, the lineal descendant of Mohammed, born A.D. 868. He mysteriously disappeared, being probably murdered by a rival, and the belief was that he would remain hidden until the 'last days,' when he would reappear, and at the head of the faithful spread Mohammedanism over the world. Many professed Mahdis have appeared from time to time in Africa as well as Asia, the latest being Mohammed Ahmed, the leader of the Soudanese insurrection (1883-85). He was born at Dongola in 1843; died in 1885. He studied Mohammedan theology at Khartoum and Berber, and at 25 years of age he retired to the island of Aba in the White Nile, where he lived in solitude for fifteen years. At the age of forty he took up the prophetic rôle, and his short victorious career began. He was succeeded by Khalifa Abdulla, whose army was completely defeated by General Kitchener in 1898, and the Mahdist rule in the Soudan brought to an end. See *Egypt*, *Soudan*.

Mahé (mä-hā'), an island in the Seychelles or Mahé Archipelago, in the Indian Ocean, about 17 miles long and 4 miles broad. It contains Port Victoria, the capital and headquarters of the British East African squadron.

Mahé, a French settlement, Southern India, within the limits of Malabar district, Madras presidency, 40 miles N. N. W. of Calicut, at the mouth of a small river of the same name. Formerly a place of considerable importance and trade. Pop. 10,298.

Mahmud (mä'mụd), Sultan of Ghazna, the founder of the Mohammedan Empire in India, born at Ghazna about 970; died in 1030. His father, Sabaktagin, governor of Ghazna, owed a nominal allegiance to Persia, but was really independent. On his death Mahmud put aside his elder brother; formed an alliance against the Persian monarch, overthrew his kingdom and laid the foundation of an extensive empire in Central Asia (999). He then turned his attention to India, and in a series of twelve invasions secured a great amount of treasure, and vastly extended his power. He was a patron of literature, and brought many men of learning about his court, among whom was the poet Firdusi (which see). He established large educational institutions at Ghazna, and spent vast sums on public works. See *Ghaznavides*.

Mahmud I, Sultan of Turkey, born in 1696; reigned in 1730-50. —Mahmud II, Sultan of Turkey, born in 1785; died in 1839; plaed on the throne by the Janizaries after the murder of his predecessor, in 1808. The chief events of his reign are the war with Russia from 1808 to 1812, which cost him Bessarabia and the provinces of Servia, Moldavia and Wallachia, as settled by the treaty of Bucharest; the war of Greek independence, which ended in the separation of that country, and the destruction of the Turkish fleet at Navarino, 1820-28; the extermination of the Janizaries, 1826; the treaty of Adrianople with the Russians, who were on the point of entering Constantinople, 1829; the independence of Egypt under Mehemet Ali, and the new treaty of Unkiar-Skelessi with the Russians, 1832-33.

Mahogany (ma-hog'a-ni), the wood of the *Swietenia mahogŏni*, a lofty and beautiful tree, indigenous to Central America and the West Indies, belonging to the nat. order Cedrelaceæ. It grows most abundantly, and attains its greatest development between 10° N. lat. and the Tropic of Cancer. It reaches maturity in about 200 years, and grows to a height of 40 to 50 feet, diameter 6 to 12 feet. The wood is hard, compact, reddish-brown, and susceptible of a brilliant polish. It is one of best and most ornamental woods known, and is widely used in the making of furniture. It is imported chiefly from Mexico and British Honduras. That which is imported from the West Indies is called 'Spanish' mahogany, and is the most valued. *African mahogany* is the wood of *Swietenia senegalensis*, and is brought from Sierra Leone. *Indian mahogany* is the wood of *S. febrifuga* and *S. chloroxylon*, two large trees found in mountainous districts of India. *Ceylon mahogany* is the *Artocarpus integrifolia*, widely cultivated throughout the warm parts of Asia. *Australian mahogany* is the red gum (*Eucalyptus margenata*).

Mahogany (*Swietenia mahogŏni*).

Mahomet. See *Mohammed*.

Mahon (mā'on), Lord. See *Stanhope, Philip Henry, Earl*.

Mahon. See *Port Mahon*.

Mahony (ma-hō'ni), Francis, known as 'Father Prout,' born at

Cork in 1804; died at Paris in 1866. He was educated at a Jesuit seminary at Amiens, studied theology at Paris, received clerical ordination, and officiated for a short time at the chapel of the Bavarian Legation, London. About 1834 he began the contribution of an amusing series of articles known as the *Prout Papers* to *Fraser's Magazine*. In 1846 he became Roman correspondent to the *Daily News*, his letters being afterwards republished under the title of *Facts and Figures from Italy*. For the last twelve or fifteen years of his life he was Paris correspondent for the *Globe*. *Reliques of Father Prout* was published in 1836 and 1860, and *Final Reliques* in 1876.

Mahrattas (ma-rat'as), a native Hindu race, said to have migrated from Northern India, who in the reign of Shah Jehan occupied a large tract of Central and Western India. They came into prominence about the middle of the seventeenth century, when the chief Sevaji, taking advantage of the weakness of the Moguls and the wars of Aurungzebe, extended his conquests in various directions, had himself crowned king in 1674, and established the Mahratta Empire. After his death long minorities and the incompetency of the sovereigns caused the powers of the state to fall into the hands of the *Peishwa* or prime minister, who became the acknowledged head of a Mahratta confederacy. This confederacy held together till 1795, but subsequent wars and disturbances reduced the Peishwa to the position of a British dependant, and Scindia, Holkar and the Rajah of Berar were able to take the position of independent sovereigns. The confederacy came to a final end in 1818, and Scindia, Holkar, the Guicowar of Baroda and the Rajah of Kolapore became dependent princes under British protection.

Mahsir, or MAHSUR (ma'sur), the principal game fish of India, a barbel (*Barbus mosal*), notable for its large scales. It is often over 100 pounds weight. It lives in the hill streams of the north, and is valued both for its gamey qualities and its delicate flesh.

Mai (mī), ANGELO, CARDINAL, an Italian scholar, born in 1782; died in 1854. In 1799 he entered the novitiate of the Society of Jesus, afterwards became a priest, and in 1808 obtained the post of librarian at the Ambrosian Library of Milan. In 1819 he became chief librarian of the Vatican, held the office of secretary of the Propaganda (1833-38), was created cardinal, and held several high offices in the church. Through his labors in the decipherment of palimpsests he recovered some fragments of the orations of Cicero and writings of Philo, Porphyry, and others. He rendered valuable services to the cause of scholarship.

Maia (mā'ya), in Greek mythology, one of the Pleiades, the daughter of Atlas and mother of Hermes (Mercury).

Maidenhair (mā'den-hār), the name given to the *Adiantum Capillus-veněris*, an elegant fern with a creeping scaly rhizome, and bipinnate fronds, the leaflets of which are between rhomboidal and wedge-shaped, margined with oblong sori, and more or less deeply lobed. It is found in the United States and throughout the Eastern hemisphere, and possesses demulcent and mucilaginous properties.

Maidenhair-tree, the *Salisburia adiantifolia*, a deciduous tree of the yew family, a native of Japan, so called from the likeness of its leaves to the maidenhair fern.

Maidenhead (mā-den-hed), a municipal borough, England, in the county of Berks, 12 miles E. N. E. from Reading, near the right bank of the Thames. Its first charter dates from the reign of Edward III. Pop. (1911) 15,218.

Maiden-plum, the name of two West Indian plants, *Comocladia integrifolia* and *C. dentāta*, belonging to the nat. order Anacardiaceæ. They yield a milky juice which, on exposure to air, becomes an indelible black dye.

Maid of Norway, Margaret, the daughter of Eric, king of Norway, and Margaret, the daughter of Alexander III of Scotland. On the death of Alexander she was acknowledged queen of Scotland, and was betrothed to Edward, son of Edward I of England, but died on her passage to England in 1290.

Maid of Orleans. See *Joan of Arc.*

Maids of Honor. See *Honor, Maids of.*

Maidstone (mād'stun), a municipal and parliamentary borough of England, county of Kent, 32 miles S. S. E. from London, on the banks of the Medway, here crossed by a handsome bridge completed in 1879. There is a fine old church, one of the largest parochial buildings in the kingdom, supposed to be of the fourteenth century. Paper is largely manufactured in the vicinity, and an extensive trade is carried on in fruit and hops. Pop. (1911) 35,477.

71° A 70° B 69° C 68° D 67°
MAINE
Scale of Miles
0 5 10 20 30 40
Size of type indicates relative importance of towns
C.S.HAMMOND & CO., N.Y.
Longitude West from Greenwich
St. Lawrence River
St. John R.
Allegash R.
Aroostook R.
Penobscot R.
W. Br. Penobscot R.
Chaudiere R.
Mt. Katahdin 5385
Spencer Mt. 3135
Bald Mt.
Moosehead Lake
Grand Lakes
Rangeley Lakes
Mt. Abraham
Mt. Blue 3200
Schoodic or
Grand L.
Big L.
Chamberlain L.
Allagash L.
Chesuncook L.
Caribou L.
Millinocket L.
Pamedemeocook L.
Sebois Grand L.
Matagunon L.
Pomgoewahem L.
Long L.
Umsaskis L.
Chemquassabamticook L.
Churchill L.
Musquacook L.
Fish River L.
Portage L.
Square L.
Eagle Lake
Long L.
Yanburen
L. St. Francis
St. Francis
Fort Kent
St. Agatha
Wallagrass
Edmundston
Winterville
New Sweden
Acadia
Limestone
Caribou
Perham
Washburn
Presque Isle
Ashland
Mapleton
Stockholm
Plaster Rock
Aroostook Jc.
Ft. Fairfield
Easton
Mars Hill
Sprague Mill
Masardis
Robinsons
Bridgewater Cen.
Monticello
Smyrna Mills
Smyrna
New Limerick
Houlton
Newburgh Jc.
Island Falls
Oakfield
Hodgdon
Patten
Sherman Sta.
Braggville P.O.
Goldenridge
Sherman Mills
Sherman
Amity
Benedicta
Glenwood
Reed Plantation
S. Bancroft
Weston
Medway
Millinocket
Norcross
Lower Roach P.
Katahdin Iron Works
Brownville Jc.
Brownville
Packards
Endless L.
Seboeis L.
Woodie L.
Lakeview
Mattawamkeag
Winn
Prentiss
Lincoln
Lincoln Cen.
S. Lincoln
Springfield
Topsfield
Brookton
Baskahegan L.
Vanceboro
Danforth
Bancroft
Wiopitlock
Ringman
Macwahoc
Pattagumpus
Penobscot L.
Henderson
Jackman
Jackman Jc.
Soimers
Indian Pond
Greenville Jc.
Greenville
Shirley
Lake Moxie
Willimantic
Sebec L.
Monson
Sangerville
Foxcroft
Dover
Atkinson
Guilford
Abbott Village
Hales
Parkman
Flagstaff
Eustis
Caratunk
Stratton
Bingham
Kingfield
Phillips
Madrid
New Portland
Bemis
Houghton
Byron
Weld
Wilton
Upton
Berry Mills
Andover
Rumford Falls
Rumford
Peru
Mexico
Dixfield
Chesterville
Livermore Falls
E. Livermore
Readfield
Gilbertville
T. Summer
E. Sumner
Hastings
Bethel
Locke Mills
Pond
W. Paris
Norway
Paris
Waterford
Oxford
Bolsters Mills
Fryeburg Cen.
Methanic Falls
Oakfield
Bridgton
Roland
Auburn
Lewiston
Gardiner
Monmouth
Sabattus
Greene
Leeds Jc.
Wayne
Hallowell
Augusta
Winslow
Waterville
Fairfield
Clinton
Unity
Monroe
Sandy R.
Prospect R.
Prospect
Searsport
Belfast
Searsmont
Northport
Belgrade
Vassalboro
Palermo
Morrill
Windsor
Somerville
Appleton
Sargentville
Sedgwick
Bluehill
Brooklin
Bar Harbor
Mt. Desert
Eden
Winter Har.
Prospect Har.
Seal Harbor
Southwest Har.
Tremont
DESERT I.
SWAN I.
Swans I.
Deer Isle
Atlantic
Stonington
North Haven
NORTH HAVEN
Rockland
Thomaston
Camden
Rockport
Lincolnville
Belfast
Searsmont
Northport
Penobscot Bay
Penobscot
Castine
Brooksville
Sargentville
Deer Isle
Stonington
Isle au Haut
VINAL HAVEN
Vinalhaven
Tenants Harbor
Port Clyde
METINIC I.
MATINICUS I.
WOODEN BALL I.
RAGGED I.
MONHEGAN I.
Boothbay
Boothbay Har.
Damariscotta Mills
Wiscasset
Edgecomb
Bath
Brunswick
Freeport
Yarmouth
N. Yarmouth
Gray
New Gloucester
Naples
Casco
Lisbon
Lisbon Falls
Topsham
Bowdoinham
Richmond
Dresden
Whitefield
Waldoboro
Union
Warren
Washington
Randolph
Litchfield
Hallowell
Gardiner
Pittston
Chelsea
Vassalboro
Winslow
Waterville
Fairfield
Clinton
Unity
Monroe
Sandy R.
Prospect R.
Prospect
Searsport
Belfast
Searsmont
Northport
Belgrade
Vassalboro
Palermo
Morrill
Windsor
Somerville
Appleton
Sargentville
Sedgwick
Bluehill
Brooklin
Bar Harbor
Mt. Desert
Eden
Winter Har.
Prospect Har.
Seal Harbor
Southwest Har.
Tremont
DESERT I.
SWAN I.
Swans I.
Deer Isle
Atlantic
Stonington
North Haven
NORTH HAVEN
Rockland
Thomaston
Camden
Rockport
Lincolnville
Belfast
Searsmont
Northport
Penobscot Bay
Penobscot
Castine
Brooksville
Sargentville
Deer Isle
Stonington
Isle au Haut
VINAL HAVEN
Vinalhaven
Tenants Harbor
Port Clyde
METINIC I.
MATINICUS I.
WOODEN BALL I.
RAGGED I.
MONHEGAN I.
Boothbay
Boothbay Har.
Damariscotta Mills
Wiscasset
Edgecomb
Bath
Brunswick
Freeport
Yarmouth
N. Yarmouth
Gray
New Gloucester
Naples
Casco
Lisbon
Lisbon Falls
Topsham
Bowdoinham
Richmond
Dresden
Whitefield
Waldoboro
Union
Warren
Washington
Randolph
Litchfield
Hallowell
Gardiner
Pittston
Chelsea
Westbrook
Portland
S. Portland
Scarboro
Old Orchard
Saco
Biddeford
Kennebunk
Kennebunkport
Wells
Ogunquit
York Beach
York
Kittery
Kittery point
Sanford
N. Berwick
Berwick
S. Berwick
Alfred
Shapleigh
Goodwins Mills
Springvale
E. Lebanon
Waterboro
Hollis Cen.
Bar Mills
Gorham
Newfield
Parsonsfield
E. Parsonsfield
E. Baldwin
Sebago
Sebago L.
E. Hiram
Hiram
Brownfield
Fryeburg
Conway
Eaton
Chatham
Jackson
Madison
Anson
Solon
Skowhegan
Norridgewock

Maigre (mā′gėr), an acanthopterygious fish of the genus *Sciæna;* more particularly the *S. aquila*, much sought after as a food fish. It is common in the Mediterranean and the Eastern Atlantic, and is a strong, powerful fish, often measuring 6 feet in length. It is remarkable for making a sort of whirring noise as it moves through the water.

Mail, Coat of. See *Arms and Armor.*

Mail-coaches. See *Coach.*

Mailed Cheeks, a name given to the Sclerogenidæ or Triglidæ, a family of acanthopterygious fishes, from their having certain bones of the head and gill-covers enlarged to form a defense for the checks. Gurnards and bullheads are members of this family.

Maimachin, Maimatchin (mī-ma-shēn′), a trading town of Mongolia, adjoining the Russian emporium of Kiachta.

Maimansingh (mī-mun-sing′), a British district in the Dacca division, Bengal; area, 6287 square miles. It is for the most part level and open, and is well cultivated. Rice and jute are among the chief agricultural products. The Jumna and the Brahmaputra are the chief rivers, and the administrative headquarters are at Nasirabad.

Maimonides (mī-mon′i-dēz), properly *Moses Ben Maimon Ben Joseph*, a Jewish scholar, born at Cordova about 1131-39; died about 1201-09. He received an excellent education, studied Jewish and Arabic literature and Greek philosophy, attended the lectures of the Arabic philosophers, and made himself acquainted with the healing art. Driven from Spain by persecution, he ultimately settled at Old Cairo, where he attained the highest place in the estimation of his co-religionists; became physician to the Sultan of Egypt and superintendent of the Jewish communions. He systematized the whole mass of Jewish tradition, and demonstrated the principles on which Judaism is based. His books were widely circulated in Europe by means of Latin translations. His best writings in Arabic are the *Guide of the Erring*, an exposition of Judaism; a *Compendium of Logic;* a *Commentary on the Mishna;* an *Exposition of the 613 Laws of Moses*, etc. He wrote in Hebrew a complete system of the *Talmudic Judaism.*

Main (mān), a river of Germany, which rises in the Fichtelgebirge, flows in a generally westerly direction for a distance of 300 miles, and joins the Rhine a little above the town of Mainz. It is navigable for about 200 miles, and has recently been improved so as to admit the largest Rhine steamers to Frankfort. By means of King Ludwig's canal it affords through navigation to the Danube. The chief tributaries are the Regnitz and Tauber on the left bank, and the Franconian Saale on the right.

Maine (mān), one of the eastern and maritime States of the United States, bounded on the east and northeast by New Brunswick, north and northwest by Quebec, west by New Hampshire, and south by the Atlantic Ocean; area, 33,040 square miles. It is mostly an elevated country, but hilly rather than mountainous. The highest peak, Mount Katahdin, has an elevation of 5200 feet. The State is almost completely traversed by navigable rivers, the principal of which are the Penobscot and Kennebec; and in the interior are numerous lakes. The coast abounds with islands, the largest of which is Mount Desert, 15 miles long and 12 miles broad; and is indented with numerous bays and inlets, the principal of which are Penobscot, Casco and Passamaquoddy. Grass lands are extensive, and Indian corn, wheat, barley, rye and flax are the chief crops. Hay and potatoes are largely produced and are of special excellence, and oats of superior quality are grown. Many horses and cattle are kept, and the wool-clip is large and of good quality. The leading industry is the production of lumber. Not long ago the forests covered about one-half the surface of the State, but they are rapidly diminishing. The white pine, once the most important lumber product, has largely vanished, but the woodlands which still cover 80 per cent. of the area of the State, are being carefully managed, and yield a large product. Ice is an important article of export. Marble, slate, limestone and granite are abundant, and iron, lead, tin, copper and zinc are found in considerable quantities, but are not so rich as to prompt large mining operations. The fisheries give employment to a large portion of the population; and other industries are shipbuilding, the manufacture of cotton and woolen fabrics, etc. There are about 2100 miles of railways, and lines of steamers ply regularly from the larger ports. Augusta, on the Kennebec, is the seat of government, but Portland is the principal town, and a seaport of great importance. The Maine prohibitory liquor laws date from 1846. In their present form they forbid the manufacture for sale of all intoxicating liquors.

No person is allowed to sell intoxicating liquors for tippling purposes; the necessary sale of such liquors for medicinal, mechanical and manufacturing purposes being under the control of a State commissioner. The law, however, is much evaded. An effort to rescind it was made in 1911, a vote being taken which barely failed in its purpose. Pop. 742,371.

Maine, The, United States battleship, sunk from an explosion in Havana harbor, Cuba, Feb. 15, 1898; 258 of its crew of 363 being killed, and 9 reported missing. This disaster filled the nation with horror and consternation. It occurred when the relations between Spain and the United States were strained and was the main cause of the war that followed, a court of inquiry holding the vessel had been blown up intentionally. The wreck was raised and sunk outside the harbor in 1912.

Maine, an ancient province of France, lying immediately s. of Normandy, and comprising the modern departments of Sarthe, Mayenne, and parts of Orne and Eure-et-Loir. It was part of the French dominions of Henry II of England, and was wrested from John by Philip Augustus.

Maine, Sir Henry James Sumner, an English jurist, born in 1822; was graduated at Pembroke College, Cambridge, in 1842. He was appointed regius professor of civil law in the same university in 1847, and reader on jurisprudence at the Middle Temple in 1854. From 1862 to 1869 he was law member of the Supreme Council of India, and on his return home he was elected Corpus professor of jurisprudence at Oxford. In 1877 he became Master of Trinity Hall, Cambridge. His works are of great value and include *Ancient Law in Connection with the Early History of Society; Village Communities in the East and West; The Early History of Institutions; Dissertations on Early Law and Custom*, and the *Whewell Lectures on International Law.* He died in 1888.

Maine-et-Loire (mān-e-lwär), a western department of France; area, 2750 square miles. It has a gently-undulating surface, the slopes of which are generally covered with vines, while the plains are of great fertility. About one-half of the entire area is arable. Some of the white wines produced are much esteemed. The Loire traverses it almost centrally, east to west, and receives within the department the Maine, formed by the united streams of the Loire, Sarthe and Mayenne. The manufacture of cotton, linen and woolen tissues is important. Pop. 513,490.

Maine Liquor Law. See under *Maine.*

Mainpuri (mīn-pu̧′rē), a district and town of British India, Agra division, Northwestern Provinces. Area of district, 1697 square miles; pop. 801,216.—Mainpuri, the capital of the district on the Agra branch of the Grand Trunk Road, has a pop. of about 19,000.

Maintenance, Cap of. See *Cap.*

Maintenon (maṇ-tė-nōṇ), Françoise D'Aubigné, Marchioness de, wife of Louis XIV, and granddaughter of Henry the Fourth's friend Theodore Agrippa D'Aubigné, was born in 1635, in the prison of Niort in Poitou, where her father, a profligate adventurer, was then confined. Left quite destitute on his death in her tenth year, Mademoiselle D'Aubigné spent her youth in dependence on her rich relatives, and was glad to contract a nominal marriage with the famous with Scarron, a deformed, old and infirm man. Her beauty, liveliness and propriety of conduct gained for her powerful friends among those who frequented her husband's house; and on Scarron's death she was entrusted with the charge of the children born to Louis XIV by Madame de Montespan. She assumed this office in 1669, and played her cards so dexterously that the king married her privately, probably in 1685, when her age was fifty and his own forty-seven. For the remaining years of his life she was his most confidential adviser. She was a virtuous woman, and a devout and bigoted Catholic, ambitious and resolute, but disinterested and charitable. Her published letters give her a creditable place in French literature. She died in 1719, at the nunnery or school of Saint Cyr, which she herself had founded.

Mainz (mīnts; English, *Mentz;* French, *Mayence*), a fortified town of Germany, in the grand-duchy of Hesse, finely situated on the left bank of the Rhine, opposite the mouth of the Main, 20 miles w. s. w. Frankfort. The Rhine is here crossed by a bridge connecting Mainz with the small town of Castel, which is within the system of fortifications. There is also a railway bridge. The older part of the town has been mostly modernized since the destruction caused by a powder-magazine explosion in 1857, and an extensive new quarter has been added since the recent widening of the fortified circuit. Among the more interesting buildings are the cathedral (recently restored), a vast building of red sandstone, finished in the fourteenth century, adorned with several

WRECK OF THE BATTLESHIP MAINE, HAVANA HARBOR

A general view of the cause of the Spanish-American War, showing the cofferdam built to permit a thorough examination, which proved the theory that the disaster was caused by a sunken mine or torpedo. After this inspection the wreck was cut up, floated out, and sunk in the Gulf of Mexico.

finely painted windows, frescoes, and a great number of ancient and curious monuments; the former electoral palace, now containing the city library (150,000 vols.), picture gallery, museum, etc.; the old collegiate church of St. Stephen, a fine specimen of Gothic architecture; the grand-ducal castle; the courts of justice; the government buildings; the town hall, a new renaissance structure; the theater, central railway station, Gutenberg's house and other buildings associated with the invention of printing, etc. There is a fine statue of Gutenberg by Thorwaldsen. The handsome new quay, about 330 feet in breadth, along the Rhine, affords a pleasant promenade; and there are several docks. The manufactures embrace leather, furniture, hardware, carriages, tobacco, beer, chemicals, musical instruments, etc. The trade, particularly transit, is extensive. Mainz was for long the first ecclesiastical city of the German Empire, of which its archbishop-elector ranked as the premier prince. Its history during the sixteenth century is of considerable interest in connection with the progress of the Reformation. Pop. (1910) 113,245.

Maiolica (mȧ-yol'i-kȧ). See *Faience.*

Mair, John. See *Major.*

Maire, Le, Straits of, a channel between Terra del Fuego and Staten Island, named from a Dutch pilot who discovered it in 1616.

Maisonneuve (mā-sō-nĕv), a city of Quebec province, Canada. Pop. (1911) 18,684.

Maistre (mā-tr or mās-tr), Joseph Marie, Comte de, an Italian statesman and polemical writer, born at Chambéry in 1754; died at Turin in 1821. In 1803 he was sent as ambassador to St. Petersburg, returning to Turin in 1817, when he became a member of the Sardinian ministry. He was a reactionary in politics, religion and philosophy, a supporter of absolute monarchy, and of the infallibility of the pope. His principal writings are *Du Pape*, *De l'Eglise Gallicane*, and the *Soirées de St. Petersburg.*—His younger brother, Xavier de Maistre, born at Chambéry in 1763; died at St. Petersburg in 1852; is chiefly famous for his *Voyage autour de ma Chambre*, a delightful work.

Maitland (māt'land), a town in New South Wales, 95 miles north of Sydney, on the Hunter River. It comprises two distinct municipalities, East Maitland and West Maitland, separated from each other by Wallis Creek, over which is an excellent bridge. It is situated in the midst of a very fertile agricultural district, and coal of excellent quality and great quantity is found in the neighborhood. The industries comprise coach-building, brewing, boot-making, etc. Population of East and West Maitland 10,214.

Maitland, John. See *Lauderdale.*

Maitland, Sir Richard (Lord Lethington), a Scottish poet, lawyer, and statesman, born in 1496; died in 1586. He studied at St. Andrews and in France, and on his return to Scotland, was employed in various commissions by James V, and afterwards by the Regent Arran and Mary of Guise. He collected the decisions of the Court of Session from September, 1550, to July, 1565, and made a celebrated collection of early Scottish poetry. His own verses, chiefly satirical, were printed by the Maitland Club in 1530.

Maitland, William, commonly known as Secretary Lethington, a Scottish statesman, eldest son of Sir Richard Maitland, born about 1525; died in 1573. He early adopted the reformed doctrines, and was one of the first public men openly to renounce the mass. In 1558 he was appointed secretary of state by Mary of Guise. In the following year he joined the Lords of the Congregation, who had taken possession of Edinburgh. In 1560 he was speaker of the parliament which abolished the authority of the pope in Scotland. On Queen Mary's arrival in Scotland he was chosen one of her principal ministers, and was continually employed as her envoy to the English court. After Darnley's murder he conspired to effect Mary's escape from Lochleven; yet he attended the coronation of James VI, and fought against her at Langside. The regent Moray, suspecting him of being at the bottom of the intrigues in favor of Mary both in England and Scotland, had him arrested in 1569 as an accessory to Darnley's murder. He was set at liberty by Kirkcaldy of Grange, and after the assassination of Moray he became the life and soul of the queen's party, and kept up an active correspondence with Mary. In 1571 he joined Kirkcaldy in Edinburgh Castle; was proclaimed a traitor by the parliament, and attainted with his two brothers. On the surrender of Edinburgh Castle, Kirkcaldy and his brother were hanged, but Maitland died in prison in Leith, presumably by his own hand.

Maize (māz; Sp. *maiz*, from Haytian *mahiz*, the native name of the plant), Indian corn, a prominent species

of a genus of plants found in the warmer parts of the world, where it answers a purpose similar to that of wheat in more northern countries. The common maize or Indian corn is the *Zea Mays* of botanists, a monœcious grass, of vigorous growth, with stems not more than 2 feet high in some varieties, and reaching the height of 8 or even 10 feet in others. The grains are large, compressed, and packed closely in regular parallel rows along the sides of a receptacle many inches long. In large varieties the ear or *cob* is often 1 foot long and 2 or 3 inches in thickness. Maize is extensively cultivated in the United States, it being known as corn, and the crop at times

Maize (*Zea Mays*).

has reached the vast amount of 3,000,000,000 bushels annually. Its flour, though very nourishing, is not glutinous, and is usually mixed with wheat, rye, or other flour before it is baked. It is largely used in the United States for making cakes and bread of various kinds, the favorite brown bread of New England being made from a mixture of corn and rye meal. The tender variety known as sugar-corn is, when boiled, a favorite table vegetable. It is largely kept for winter use by canning. In America, large quantities of this grain are roasted till they split, and are then eaten under the name of *pop-corn*. From the green stems a juice is expressed, which unfermented gives a pleasant syrup, and fermented is converted into an excellent spirit. Paper has been made from maize fibers. The pith of the stem has been used as a packing for the sides of war vessels, it swelling when wet so as to prevent the flow of water through holes made by artillery. Maize is also cultivated throughout a great part of Asia and Africa, and in several countries of the south of Europe, as Spain, Italy and Roumania. The green stems and leaves form nutritious food for cattle, and in Great Britain it is sown and cut green for this purpose. *Z. Curagua*, a smaller species, is the Chile maize or Valparaiso corn.

Majolica, or Maiolica. See *Faience.*

Major (mā'jur), in the army, is a field officer next in rank above a captain and below a lieutenant-colonel. His duties are to superintend the exercises of the regiment or battalion, to carry out the orders of his superior officers, and to command in the absence of the lieutenant-colonel.

Major, in music, designates in general a larger in contradistinction to a smaller interval of the same denomination, called a *minor* interval; thus a *major tone* is the interval between two tones having the proportion to each other in number of vibrations of 8:9; a *minor tone* the interval between two tones in the ratio of 9:10; a major third is an interval of two tones (major and minor); a minor third an interval of a tone and semitone. The *major mode* is one of the two recognized modern modes (or forms of the scale), in which the first third in the scale is a major third, in contradistinction to the *minor mode*, in which the first third is regarded as a minor third.

Major, or Mair, John, a Scottish theologian and historian, born about 1470; died about 1550. He was principal of Glasgow University from 1518 to 1522, and head of St. Salvator's College, St. Andrews, from 1533 till his death. Knox and Buchanan were both among his pupils. Among his works, which are in Latin, are *Commentaries on the Four Books of Sentences*, a *History of Scotland*, etc.

Majorca (ma-jōr'ka; Spanish, *Mallorca*), an island in the Mediterranean belonging to Spain, the largest of the Balearic group, between Iviça and Minorca; greatest length, 58 miles; greatest breadth, 45 miles; area, 1420 square miles. It is very irregular in shape, and deeply indented. The coasts on the west and north, facing Spain, are lofty and steep; in other directions, and particularly on the east, they are low and shelving. The island is generally fertile, producing, besides large crops of cereals, hemp, flax, silk and saffron. Fruits abound; the pastures are rich, and maintain large numbers of cattle; and the fisheries on the coasts are valuable. It is traversed by

several railways. Chief town, Palma. Pop. 248,191.

Majority (ma-jor'i-ti), in law, is the period of full age, at which the laws of a country permit a young person to manage his own affairs. In the United States, as well as in most other countries, the age of majority is twenty-one years.

Makaroff (mak'a-rof), STEPAN OSIPOVICH, a Russian admiral, born in 1848. He served with conspicuous courage in the Russo-Turkish war of 1877-78. From 1891-94 he served as admiral and inspector-in-chief of naval artillery, and designed the famous ice-breaking steamer *Ermak*. He was given command of the fleet at Port Arthur in the war with Japan, and on April 13, 1904, was one of the 600 who perished from the blowing up, by the Japanese, of the battleship *Petropavlosk*.

Makart (ma-kart'), HANS, a German painter, born at Salzburg in 1840; died in 1884. He studied at Vienna and Munich, and latterly settled at Vienna. He was a great colorist, but was deficient in conception and drawing. Among his chief works are: *A Trilogy of Modern Amorettes; The Seven Deadly Sins; The Dream of a Man of Pleasure; The Gifts of Sea and Earth; Leda;* and *The Entrance of Charles V into Antwerp.*

Maki (ma'ki), a name applied to some of the lemurs.

Makó (mo'kō), or MAKOVIA, a town of Hungary, on the right bank of the Maros, 22 miles east by south of Szegedin. It has pastoral, agricultural and fishing interests and a number of oil mills. Pop. 33,722.

Makololo (ma-ko-lō'lo), a large and once powerful tribe in South Africa, between lat. 13° and 20° S. The Makololos attained considerable eminence during Livingstone's time, but shortly after 1864 the kingdom was broken up.

Makrizi (ma-krē'zē), ABU AHMAD MOHAMMED, AL, an Arabic writer, born in 1360; died in 1442. He wrote an *Historical and Topographical Description of Egypt*, a *History of Saladin*, a *Treatise on Moslem Coins*, etc.

Malabar (mal-a-bär'), a maritime district of British India, in the presidency of Madras, on the west coast; area, 5765 square miles; length, 145 miles; breadth, varying from 25 miles on the N. to 70 miles on the S. A great portion is comparatively low, intersected by narrow ravines, covered with forests and jungle, and watered by innumerable streams. Tea and coffee plantations have been successfully established. The principal towns are Cananor, Tellicherry and Calicut. Pop. 6,029,304. The name Malabar is often applied to the whole extent of coast country as far north as Bombay.

Malabar Leaf, the leaf of the *Cinnamōmum malabathrum* of Malabar, formerly used in European medicine.

Malabar Plum, a tree and its fruit, the *Eugenia Jambos*, nat. order Myrtaceæ. It grows plentifully on the Malabar coast, and its fruit is much esteemed. Called also *Rose-apple.*

Malacca (ma-lak'a), a territory and town forming part of the British colony of the Straits Settlements, on the west coast of the Malay Peninsula, on the Strait of Malacca. It extends about 40 miles along the shore of the strait, and about 25 miles inland. Area, 875 sq. miles. The sea-coast is rocky, and the interior in some parts mountainous, with picturesque and fertile valleys intervening. Tapioca and rice are the chief products. The district contains deposits of gold and tin. Malacca is ruled by a resident councilor subject to the governor of the Straits Settlements. The town is one of the oldest European settlements in the East, being founded by the Portuguese in 1509. It was acquired from the Dutch in 1825. Its trade and importance are now slight. Pop. of town and territory 94,487.

Malacca, STRAIT OF, the channel between the Malay Peninsula and the Island of Sumatra, extending from latitude 1° to about 6° N. Entire length, about 520 miles; breadth, varying from 25 miles to 200 miles.

Malacca Bean, the fruit of the *Semecarpus Anacardium*, or marking-nut tree of India, belonging to the nat. order Anacardiaceæ. It closely resembles the cashewnut.

Malacca Cane, a cane made from the wing-leaved, erect, slender, cane-stemmed palm *Calămus scipiōnum*, which, when dressed, is of a brown color, sometimes mottled or clouded. It is brought from Singapore and Malacca, but is chiefly produced in Sumatra.

Malachi (mal'a-kī), the twelfth and last of the minor prophets. Nothing is known of the history of the writer, and it is even doubtful if Malachi ('Messenger of Jehovah') be a proper name or an assumed epithet. The book evidently belongs to the latter part of the governorship of Nehemiah, about B.C. 420. It contains denunciations of the sins of the Israelites, and predicts the

coming of the Messiah and the conversion of the Gentiles.

Malachite (mal'a-kīt), a carbonate of copper, of a dark emerald-green color, and of a laminated, fibrous, or massive structure. The finest specimens are obtained from Siberia, but it is found in many places all over the world. Fibrous malachite, when finely pulverized, is used as a paint; massive malachite is made into boxes, knife-handles, table-slabs, and other ornamental articles, and is susceptible of a beautiful polish. Blue malachite or azurite contains a larger proportion of carbonic acid.

Malacology (mal-a-kol'o-ji), the science of molluscous or soft-bodied animals.

Malacopteri, MALACOPTERYGII (mal-a-k o p-t ē r-i j'i-ī), a name given to those osseous fishes which are distinguished by all the rays of the fins being soft (except in a few individuals), exhibiting minute articulations, and often divided into small fibers at their extremities. They are divided into two suborders, the Malacopteri (proper) and the Anacanthini. They include the carp, salmon, pike, herring, cod, turbot and other flat fish, and the eels. See *Ichthyology.*

Malacostraca (mal-a-kos'tra-ka), a subclass of c r u s t a-ceans divided into two primary groups, sessile-eyed and stalk-eyed, and including the shrimps, lobsters, crabs, etc., together with the wood-lice, sandhoppers, etc.

Malaga (mal'a-ga), a s e a p o r t of southern Spain, in Andalusia, capital of a province of the same name, on the Mediterranean. It was anciently called *Malaca;* was a flourishing city under the Romans, and its long occupation by the Moors has left distinct marks in the older parts of the town; the Gibralfaro, or Moorish castle, on a hill overlooking the town, and considerable portions of the ancient fortifications yet remaining. Among the important buildings are the cathedral, a highly decorated structure in the composite style, with a spire 300 feet high; the Episcopal palace, custom house, and several hospitals and charitable institutions, etc. The manufactures consist chiefly of iron, the ore of which is obtained from rich mines in the vicinity; soap, cottons, linens, machinery, etc. The trade is of much more importance, the principal exports being olive oil, lead in bars, wine and fruit, particularly raisins, oranges, and almonds. The climate is one of the mildest and most equal in Europe. Pop. 130,109. —The province of Malaga has an area of 2822 sq. miles; pop. 511,989. It is traversed in all directions by offsets of the Sierra Nevada. The valleys are fertile and generally well cultivated, yielding cereals, grapes, oranges, lemons, figs, almonds, sugar-cane, etc.

Malaga Wine, a sweet S p a n i s h wine produced in the province of Malaga. It is one of the 'muscatel' wines, and is rich, luscious and full of body.

Malaguetta-pepper. See *Grains of Paradise.*

Malakoff, DUC DE. See *Pelissier.*

Malambo-bark (m a - l a m'bō), the bark of some species of *Galipea,* tropical American shrubs of the nat. order Rutaceæ, used as a substitute for cinchona.

Mälar, MALAREN. See *Maelar.*

Malaria (ma-lā'ri-a), a class of diseases, among which intermittent and remittent fevers occupy a prominent place, that have been known from a very early period to be especially prevalent in marshy districts, where they seem promoted at particular seasons by certain conditions of heat and moisture. It has long been supposed that these results were due to noxious emanations, the product of vegetable decomposition. It has recently been discovered, however, that the malarial affections are due to the action of a microbe or disease germ, which infects mosquitoes and are injected into human blood by their bite. This has been proved by persons who exposed themselves to the vapors of the Campagna and other malarious localities, but protected themselves from mosquito bites. Under these circumstances they were immune from malaria. The knowledge of this fact is likely to prove of great value in guarding against malarial diseases. Among the districts of Europe infected with malaria the Campagna di Roma (which see) is by far the most notable.

Malatesta (ma-la-tes'ta), a distinguished Italian family, the chief branch of which were lords of Rimini from 1295 to 1526, and were celebrated for the active share they took in the stirring events of that period.

Malay Archipelago (m ā - l ā'), also known as the INDIAN, ASIATIC, or EASTERN, the great group of islands situated to the southeast of Asia, and washed on the west by the Indian and east by the Pacific Ocean. The archipelago may roughly be said to lie between the meridians of 95° and 135° E., and the parallels of 11°

S. and 17°N. Within these limits lie some of the largest and finest islands in the world, as Borneo, Sumatra, Java, Celebes, the Philippines, etc., but New Guinea is not ranked as belonging to the group. The chief of the smaller islands are the Moluccas or Spice Islands, Billiton, Banca, Madura, Bali, Lombok, Sumbawa, Flores, Timor. The small islands are exceedingly numerous. The islands are generally fertile and covered with a luxuriant vegetation, and they produce all kinds of tropical products in abundance. Many of them contain volcanoes. As regards their fauna and flora they may be divided into two main groups, those east of the Strait of Macassar and the channel between Bali and Lombok having more affinities with Australia, while the others are rather Asiatic in character. The chief native race is the Malayan. A large portion of the archipelago is really or nominally under the sway of Holland. and this portion is frequently called the Dutch East Indies. See separate articles on the principal islands or groups.

Malay Peninsula, the most southern part of continental Asia, the long narrow projection that stretches first S. and then S.E. from Siam and Burmah. It is connected with Lower Siam by the Isthmus of Kra, has on the E. the Gulf of Siam and the China Sea, and on the W. the Strait of Malacca. It varies in width from 45 miles at the N. to about 210 miles. The area is about 70,000 sq. miles, and the population is variously estimated at from 1,000,000 to 2,000,000, including large numbers of Chinese. The country is mountainous, with peaks of from 5000 to 9000 feet high; it is densely wooded; rivers numerous but short; minerals important, more especially tin, which is found in great quantity and largely exported. Politically the peninsula, with the exception of the British territories of Penang and Malacca, is divided among a number of more or less independent chiefs tributary to or in treaty with Siam and Britain. The native races are Siamese, Malays and Negritos.

Malays, the name of a race of people inhabiting the Malay peninsula, and spread over all the Asiatic Archipelago. They claim to have had their native country in the Highlands of Sumatra, where they established the once powerful state of Menangkabo, now subject to the Dutch. In physical appearance they are rather under the middle height, light-brown in color, with black straight hair, high cheek bones, black and slightly oblique eyes, and scanty or no beard. The civilized Malays profess the Mohammedan religion. They are said to be of a taciturn undemonstrative disposition; naturally indolent, treacherous in their alliances and addicted to piracy. When under excitement or passion they are often seized with the 'amok' fever, when they indiscriminately cut down with great ferocity every one they meet. The Malay language is agglutinative in character, and is very extensively used as that of literature and commerce. See *Ethnology*.

Malcolm I (mål'kum), King of Scotland, reigned from 943 to 954.—Malcolm II succeeded Kenneth II in 1005. In his reign Lothian and Strathclyde became parts of the Scottish kingdom. He was assassinated at Glamis in 1034. He was the last direct male descendant of Kenneth MacAlpine.—Malcolm III, surnamed *Canmore* (Great Head), born about 1024. After the murder of his father, Duncan, by Macbeth, he sought aid from Siward of Northumbria, and his cause was also espoused by Edward the Confessor. On the defeat and death of Macbeth he was crowned at Scone in 1058. In 1068 he granted asylum to Edgar Atheling, his mother, and two sisters (one of whom, Margaret, he married in 1070), with a number of Saxon exiles. His reign, which was mostly taken up with wars with England, had nevertheless an important bearing on the civilization and consolidation of Scotland.—Malcolm IV (the Maiden) succeeded his grandfather, David I, in 1153. He surrendered Northumberland and Cumberland to Henry II in 1157. Died at Jedburgh in 1165, at the age of twenty-four.

Malcolm, Sir John, a distinguished soldier and diplomatist, was born near Langholm, in Dumfriesshire, 1769; died in London in 1833. He entered in 1782, as a cadet, the service of the East India Company. In 1797 he was made captain; and from that time to 1799 he was engaged in a variety of important services, terminating at the fall of Seringapatam. He was three times ambassador to Persia, and did excellent service in the pacification of India after the wars of Holkar and the Peishwa. In 1822 he was made major-general, and received a grant of £1000 per year from the East India Company. In 1827 he was appointed governor of Bombay, which post he continued to fill until 1831, when he finally returned to Britain. He received the honor of knighthood in 1812. As an author his principal works are: *A Sketch of the Sikhs; The History of Persia; Sketches of Per-*

sia; A Memoir of Central India; a treatise on the *Administration of British India;* and a *Life of Lord Clive.*

Malden (mal'den), a city of Massachusetts, in Middlesex county, on the Malden River, 5 miles N. of Boston. It has extensive manufactures of rubber boots and shoes, cords and tassels, emery paper, etc. Pop. 44,404.

Malden Island, a small island of coral formation in the Pacific; lat. 3° S. lon. 155° W. It belongs to Britain and produces guano.

Maldive Islands (mal'dīv), a remarkable chain of islands in the Indian Ocean, extending from lat. 0° 40′ S. to 7° 6′ N., nearly on the meridian of 73° 30′ E., and composed of seventeen clusters of atolls. The larger islands are richly clothed with wood, chiefly palm, and are fertile in fruit and in various kinds of edible roots; they also produce millet, and abound in cocoanuts, fowls, and all descriptions of fish. The inhabitants carry on a considerable trade with Bengal, Ceylon and the Malabar coast, extending also to the Red Sea and to Sumatra. They are governed by a sultan, who resides in the island of Male or Mohl, and pays annual tribute to the British government in Ceylon. Pop. about 30,000.

Maldon (mal'dun), a municipal borough and river port of England, county of Essex, 36 miles northeast of London, on the Blackwater estuary, near the mouth of the Chelmer. It has a fine old church dating from 1056, an interesting old town hall and a grammar school dating from the reign of Edward VI. Its industries are salt-crystallizing, iron-founding and oyster-fishing. Pop. 6253.

Malebranche (mål-bränsh), NICOLAS, a French philosopher, born in 1638; died in 1715. He studied theology and philosophy at the colleges of La Marche and of the Sorbonne, and at the age of twenty-two he was admitted into the congregation of the oratory. In 1673 he published his treatise *De la Recherche de la Vérité.* The doctrines of this celebrated work are founded upon Cartesian principles. Among his other writings are *Conversations Métaphysiques et Chrétiennes; Traité de la Nature et de la Grace; Méditations Métaphysiques et Chrétiennes; Traité de Morale,* etc.

Male-fern, the *Nephrodium* or *Lastrea Filix-mas,* a handsome fern common throughout the temperate part of the northern hemisphere, with large fronds rising from a short erect caudex. Its rhizome and root-stalk have anthelmintic properties, and are used for the expulsion of tapeworms.

Malesherbes (mål-zerb), CHRÉTIEN GUILLAUME DE LAMOIGNON DE, a French statesman, the son of Guillaume de Lamoignon, chancellor of France, was born at Paris in 1721. After studying at the Jesuits' college he qualified himself for the legal profession, and became a counselor of the parliament of Paris. He passed through several grades of office, and was in 1750 made president of the Court of Aids. His functions were suspended by the temporary abolition of the parliament in the reign of Louis XV, and were restored with its revival under Louis XVI. He held office along with Turgot, and resigned on his retirement. Aided by Tronchet and Desèze he acted as leading counsel for Louis XVI. Acts of loyalty far less decided were in that day the sure road to destruction. He was condemned to death, and guillotined on April 22, 1794. He was the author of a few miscellaneous treatises.

Malherbe (mål-erb), FRANÇOIS DE, a French poet, born at Caen in 1555; died in 1628. He was the protégé of Henry IV; wrote light lyrics, odes, epigrams, etc.; and so far as form is concerned he may be considered the father of French classical poetry.

Malibran (mà-lē-brän), MARIA FELICITA, one of the greatest singers of modern times, born at Paris in 1808, the daughter of a well-known singer and singing master, Manuel Garcia. She made her début in 1825 at the opera in London, and the following year went to New York, where she married M. Malibran, a French banker, from whom she soon separated. She returned to Europe, where her splendid vocal powers and dramatic ability made her an extraordinary favorite in Britain and on the Continent. Having obtained a divorce from her first husband, she married the violinist De Bériot in 1836, but died the same year.

Malic Acid (mal'ik; $C_4H_6O_5$), a bibasic acid found in many fruits, particularly in the apple, hence the name, from L. *malum.* It is most easily obtained from the fruit of *Pyrus Aucuparia* (mountain-ash or rowan tree), immediately after it has turned red, but while still unripe. It is very soluble in water, and has a pleasant acid taste.

Malice (mal'is), in law, a formed design or intention of doing mischief to another, called also *malice prepense* or *aforethought.* It is *express* when the formed design is evidenced by certain circumstances discovering such

intention; and *implied* when the act is done in such a deliberate manner that the law presumes malice, though no particular enmity can be proved. *Malicious mischief* is the committing of an injury to public or private property from sheer wantonness or malice. This offense is punishable with great severity. Intent is the material ingredient in offenses of this nature; but as the law presumes malice in the very commission of the act, it lies on the party indicted to rebut the presumption of malice, or sufficiently explain the act. A *malicious prosecution* is a prosecution brought against a person maliciously and without reasonable cause. From the mere want of probable cause malice may be inferred.

Malignants (ma-lig'nantz), in English history, a name applied by the parliamentary party during the civil war to describe the king's evil advisers; the name came to be afterwards given to all who supported the king against the parliament.

Malines (mȧ-lēn). See *Mechlin.*

Mallard. See *Duck.*

Malleability (mal-e-a-bil'i-ti), the property of being susceptible of extension by beating; almost restricted to metals. The following is the order of malleability of the metals:—Gold, silver, copper, platinum, iron, aluminium, tin, zinc, lead, cadmium, nickel, cobalt. Ductility and malleability are nearly allied, but they are seldom possessed in the same proportion by the same metal.

Malleus (mal'ē-us), one of the bones of the ear. See *Ear.*

Mallock (mal'ok), William Hurrell, was born in Devonshire, England, in 1849, his mother being a sister of Froude, the historian. He was educated privately and at Balliol College, Oxford, where he gained the Newdigate for a poem on the *Isthmus of Suez.* He is a frequent writer on political and social subjects in the magazines, and has published *The New Republic; The New Paul and Virginia; Is Life Worth Living?; A Romance of the Nineteenth Century; The Old Order Changes,* a novel; etc.

Mallow (mal'ō; *Malva*), a genus of plants of the natural order Malvaceæ. *M. sylvestris* (the common mallow) is a common and widely diffused species, possessed of mucilaginous properties. The whole plant is used officinally in fomentations, cataplasms and emollient enemas. When fresh the flowers are reddish-purple, but on drying become blue, and yield their coloring principle both to water and alcohol. The alcoholic tincture furnishes one of the most delicate of reagents for testing the presence of alkalies or acids. The dwarf mallow (*M. rotundifolia*) and musk mallow (*M. moschāta*) are also found in Britain. The fiber of *M. crispa* is sufficiently tenacious to be used in making cordage. Mallow has been naturalized in the United States.

Common Mallow (*Malva sylvestris*).

Malmaison (mal-mā-zoṇ), a historic chateau in France, department of the Seine, 5 miles w. of Paris, once the property of Richelieu. It was the favorite residence of the Empress Josephine, wife of Napoleon I.

Malmedy (mäl'me-dē), a town of Rhenish Prussia, about 24 miles south of Aix-la-Chapelle, on the Warche in a basin surrounded by hills; manufactures of sole-leather, paper, etc. Pop. 4680.

Malmesbury (mämz'be-ri), a town of England, county of Wilts, on an eminence, 23 miles N. E. of Bristol. It is well built, and has the remains of an abbey founded in the sixth century. Pop. (1911) 2657.

Malmesbury, James Harris, Earl of, son of James Harris, the author of *Hermes,* born in 1746; died in 1820. His diplomatic career, dating from 1768, was a brilliant success, and earned him the reward of an earldom in 1800. His *Diaries* and *Correspondence* were published in 1844, his *Letters* in 1870.—His grandson, James Howard, third earl, born in 1807, has been foreign secretary and keeper of the privy seal. He published *Memoirs of an Ex-Minister* in 1884.

Malmesbury, William of, an English historian, born probably in Somersetshire about the year 1075; died about 1143. He received his education at the Benedictine Abbey of Malmesbury, and subsequently became librarian and precentor of the abbey. His *De Gestis Regum Anglorum* is a general history of England, from the arrival of the Saxons in 449 to 1128; he also wrote a history from that year to 1143; *De Gestis Pontificum Anglorum; Antiquities of Glastonbury;* etc. All his works are

highly esteemed as trustworthy chronicles.

Malmö (mål'meu), a seaport of Sweden, capital of the laen or prefecture of Malmöhus, situated on the eastern shore of the Sound, opposite Copenhagen. The manufactures and other industries are considerable, and the shipping trade of the port is large. Pop. 60,857.

Malmsey Wine (mam'zi), is a sweet wine obtained from a grape originally brought from Malvasia or Malvoisie in the Morea. It is made in the Azores, the Lipari Islands, Teneriffe, Sardinia, Sicily, but more especially in Madeira, from grapes that have been allowed to shrivel on the vine.

Malo (mä'lō), St., a fortified seaport of northwest France, department of Ille-et-Vilaine, on a rocky island communicating with the mainland by a long causeway. It has a commodious and secure harbor formed by the mouth of the Rance, the island, and causeway. Pop. 9122.

Malone (ma-lōn'), a city of Franklin County, New York, 57 miles W. by S. of Rouse's Point. It has iron, woolen, paper, flour, and pulp mills, broom factories, etc. Pop. 6467.

Malone, Edmund, a commentator and editor of Shakespere, was born at Dublin in 1741; died in 1812. He was called to the London bar in 1767, but devoted himself entirely to literary pursuits. He published an edition of Shakespere with suggestive notes, in 1790; *Remarks on the Rowley* (Chatterton) *Controversy;* an *Inquiry into the Ireland Shakesperean Forgeries;* biographical memoirs of Sir Joshua Reynolds, Dryden, W. Gerard, Hamilton, etc.

Malory (mal'o-ri), Sir Thomas, born probably about 1430. His compilation, *The Most Ancient and Famous History of the Renowned Prince Arthur*, based on the romances of *Merlin*, *Lancelot*, *Tristram*, the *Quest of the Graal*, and the *Mort d'Arthur*, was first printed by Caxton in 1485. Malory is supposed to have been a Welshman, but all that is known of him is that he was a knight, and finished the book about 1470. The work is one of the most celebrated of mediæval productions.

Malot, Hector Henri, a French novelist, born near Rouen in 1830; died in 1907. He lived in London as a newspaper correspondent and wrote numerous novels, including the autobiographical *Le Roman de mes Romans.*

Malpighi (mål-pē'gē), Marcello, an Italian physician and anatomist, born in 1628; died in 1694. He was successively professor of medicine at Bologna, Pisa and Messina. In 1691 he became physician to Pope Innocent XII. His works relate to anatomy, physiology and vegetable anatomy.

Malpighia (mal-pē'gi-a), named after Marcello Malpighi, a genus of plants, the type of the nat. order Malpighiaceæ. The species are small trees or shrubs, with opposite shortly-stalked leaves and axillary and terminal fascicles or corymbs of white or red flowers. The fruit of one species (*Malpighia urens*) is the Barbadoes cherry of the West Indies.

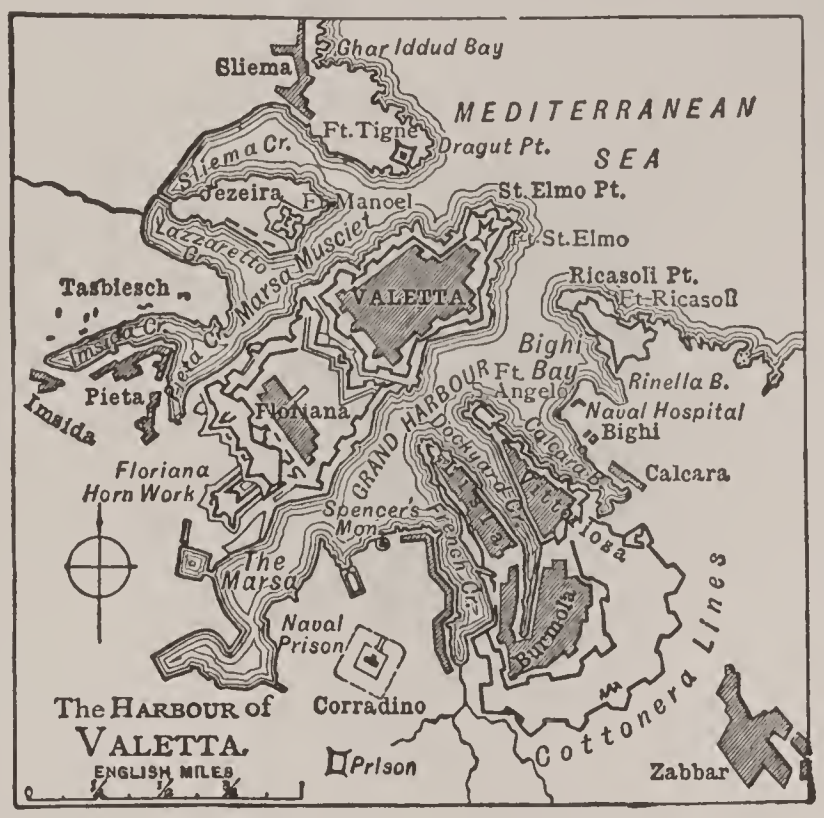
Malpighian Bodies and Corpuscles, in anatomy, certain small round bodies in the cortical substance of the kidney and in the spleen. See *Kidney* and *Spleen.*

Malplaquet (mål-plå-kā), a village in the French department of Nord, on the Belgian frontier, 26 miles S. E. of Valenciennes, celebrated for the defeat of the French under Villars by the allied British and Austrian troops under Marlborough and Prince Eugene, September 11, 1709.

Malt (mąlt), grain, usually barley, steeped in water and made to germinate, the starch of the grain being thus converted into saccharine matter, after which it is dried in a kiln, and then used in the brewing of porter, ale, or beer, and in whisky distilling. One hundred parts of barley yield about ninety-two parts of air-dried malt. See *Brewing.*

Malta (mąl'ta; anciently *Melita*), an island in the Mediterranean belonging to Britain, 62 miles S. S. W. of Sicily, and 197 miles N. of Africa; length, northwest to southeast, 17 miles; central breadth, about 9 miles; area, 98 square miles, to which the adjoining islands of Gozo and Comino add 24. It is of an irregular oval shape, deeply indented on all sides except the south, where the coast forms a continuous and almost unbroken line. The most important indentation is the double bay on which the capital, Valetta, stands. The greatest elevation of the island is about 750 feet. There are only a few small streams, but the springs are so numerous and copious that no deficiency of water is felt. An extensive series of water-works, including reservoirs for irrigation, have recently been constructed. The soil is thin, and rests on a calcareous rock; in some parts earth has been brought from Sicily and put down. Corn, cotton, potatoes and clover are the chief crops. Both the vine and olive are

cultivated, and fruit, particularly figs and oranges, is very abundant. The manufactures consist of cotton goods, lace, jewelry, etc. The central position of Malta in the Mediterranean makes Valetta an invaluable naval station. It has, in consequence, been provided with excellent docks and very strong fortifications. The climate is very hot in summer, but pleasant and healthy in winter, attracting many visitors at this season. Malta passed successively through the hands of the Phœnicians, Greeks and Carthaginians, and was finally attached to Rome during the second Punic war. After the fall of the Roman Empire it was seized at different times by Vandals, Goths and Saracens. From the last it passed to Sicily, and followed its fortunes till 1522, when Charles V granted it to the order of St. John of Jerusalem, the knights of which defended it successfully against a tremendous siege by the Turks in 1565. In 1798 the grand-master surrendered it without defense to Napoleon. It was taken by the British in 1800, and finally annexed by them in 1814. The executive government is in the hands of a governor and council. By a new constitution adopted in 1888 the legislative council consists of the governor and the members of council (6), with 14 members elected by the constituencies into which Malta and the islands of Gozo and Comino have been divided. The people are mainly of Arabic race and speak a kind of Arabic mixed with Italian. Italian and English are also spoken. The educational institutions include a university, a lyceum, two secondary schools, besides primary and infant schools. Besides the capital Valetta and the Three Cities adjoining, there are several considerable towns or villages. The total population, inclusive of the garrison (about 5000) 206,690.



Malte-Brun (mält-brůn), geographer, properly MALTHE KONRAD BRUUN, born at Thisted, Jutland, in 1775; died at Paris in 1826. His liberal political opinions caused his banishment from Denmark, and he became a French citizen about 1800. His geographical works include: *Géographie Mathématique, Physique et Politique; Tableau de la Pologne; Précis de la Géographie Universelle*, etc.

Maltese Cross. See *Cross.*

Maltese Dog (mal-tēz'), a very small kind of spaniel, with long silky, generally white hair and round muzzle. They are lively and good-tempered, and make agreeable pets.

Maltha (mal'tha), a variety of bitumen, viscid and tenacious, like pitch. It is unctuous to the touch, and exhales a bituminous odor.

Malthus (mal'thus), THOMAS ROBERT, an English political economist, born in 1766; died in 1834. He studied at Jesus College, Cambridge, became fellow of his college, took orders and held a small living in Surrey. In 1805 he was appointed professor of history and political economy in the East India Company's College at Haileybury, an office which he held till his death. In 1798 he first published the views with which his name is associated in his *Essay on the Principles of Population as it Affects the Future Improvement of Society.* It was improved and matured in subsequent editions. His leading principle is that population, when unchecked, goes on increasing in a higher ratio than the means of subsistence can, under the most favorable circumstances, be made to increase; that the great natural checks to excessive increase of population are vice, misery, and moral restraint; and the great business of the enlightened legislator is to diminish the first two and give every encouragement to the last. Besides the *Essay* Malthus wrote various pamphlets and works of temporary interest.

His theory has been strongly debated and opposed, and so far the facts do not accord with it, whatever the future may disclose.

Malton (mal'tun), a town of England, county of York, 16 miles northeast of the city of that name, on the right bank of the Derwent. There are some large breweries, and also foundries, agricultural implement works, etc. Till 1885 it returned a member to Parliament. Pop. (1911) 4822.

Malva. See *Mallow.*

Malvaceæ (mal-vā'se-ē), the mallows, a large nat. order of exogenous plants, having polypetalous flowers, monadelphous stamens, unilocular anthers, valvate estivation, and often an external calyx (epicalyx) or involucre. A large proportion of the order consists of herbaceous or annual plants, inhabiting all the milder parts of the world, but found most plentifully in hot countries. Several species are of essential service to man. As emollients they are well known in medical practice. The hairy covering of the seeds of the various species of *Gossypium* forms raw cotton. The inner bark of many species yields fiber of considerable value. Many species of *Althœa*, *Sida* and *Hibiscus* are splendid flowering plants. See *Mallow.*

Malvasia (mal-vā'shi-a), the Italian *Napoli di Malvasia*, a great fortress and commercial center of the Levant during the middle ages; now a small town with about 1000 inhabitants on the eastern shore of the Morea.

Malvern (mal'vern), GREAT, a fashionable watering place and health resort of England, county of Worcester, 8 miles s. w. of the city of Worcester, on the eastern slope of the Malvern Hills. It is irregularly built, but is surrounded by beautiful villas and handsome mansions, and has large and handsome hydropathic establishments, a fine church, etc. Malvern College is a flourishing proprietary institution on the plan of the great public schools. Pop. (1911) 16,514.

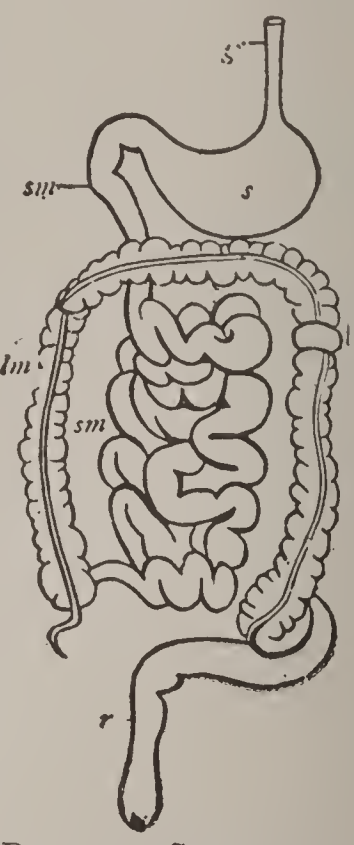
Malvern Hills, a range of England, on the borders of Worcester and Hereford shires. It extends north and south for about 9 miles, and attains an altitude of 1395 feet.

Malwan (mäl'wän), a town of India, Bombay, on an island off the coast, 210 miles s. of Bombay. Pop. about 17,000.

Mamaroneck (ma-mar'o-nek), a town of Westchester Co., New York, on Long Island Sound, 20 miles eastward from New York City. It is a residence place for New Yorkers and has many elegant villas. Pop. 5699.

Mamelukes, or MAMALUKES (mam'-a-lūkz; Arabic, 'slaves'), the former mounted soldiery of Egypt, consisting originally of Circassian slaves. As early as 1254 they became so powerful that they made one of their own number sultan, this dynasty continuing till 1517, when it was overthrown by Selim I. They still, however, continued to be virtual masters of the country. They suffered severely in opposing the French at the end of the eighteenth century, and in 1811 Mehemet Ali caused a general massacre of them throughout Egypt.

Mammalia (mam-mā'lya; Latin, *mamma*, a breast), the highest class at once of the Vertebrata and of the animal kingdom, including those warm-blooded animals we familiarly term 'quadrupeds,' the whales and other fish-like forms, and man himself. Their distinctive characteristic is that the female suckles the young on a secretion peculiar to the class, furnished by the mammary glands of the mother, and known as milk. The skin is always more or less covered with hairs, which are found in many forms, from the finest wool or silky down to large coarse bristles and even spines. The skeleton exhibits a uniformity of essential structure, and in most points agrees with that of man. The cavity of the thorax or chest is bounded by the ribs, which vary greatly in number, but generally correspond to that of the dorsal vertebræ. The skull forms a single piece composed of bones immovably fastened together, to which is articulated the lower jaw, composed of two halves united at the chin. The skull is joined to the spine by means of two condyles which fit into the first cervical vertebra. The limbs, like those of all other Vertebrata, are never more than four. The front



DIGESTIVE SYSTEM OF A MAMMAL.

g, Gullet or œsophagus; *s*, stomach; *sm*, small intestine; *lm*, Large intestine; *r*, Large intestine terminating in the rectum.

limbs are invariably present, but in cetaceans and such allied forms as the dugongs and manatees the hinder limbs are either completely suppressed or present only in a rudimentary state. The limbs are generally well developed, and are most commonly adapted for terrestrial progression; some are suited for burrowing, others for climbing, those of the cetaceans and seals for swimming, while some (the bats) have the forelimbs developed into a kind of wing. Teeth are present in most mammals; but they are only represented in the embryo in the whalebone whales, and are entirely absent in the ant-eater, pangolin, and echidna. The teeth are lodged in *alveŏli* or sockets, and are not ossified to the jaw-bones as in lower forms. Mammals which have only a single set of teeth throughout life are termed *monophyodont;* those who have the first set of teeth (milk or deciduous teeth) replaced by a second set of permanent teeth are called *diphyodont.* The teeth are referable to four groups, which differ in form, position, and function: *incisors*, *canines*, *premolars* and *molars.* The chest or thorax in all mammals is separated from the abdominal cavity by a complete *diaphragm* or 'midriff,' which thus constitutes a great muscular partition between these cavities, and also forms the most important agent in effecting the movements of the chest during respiration. Within the thorax the heart and lungs are contained; while the abdomen and its lesser pelvic cavity contain the organs relating generally to digestion, excretion, and reproduction. The stomach, generally simple, may, as in some monkeys, in the kangaroos, in the pig, and most of all in the ruminants, exhibit a division into compartments. A liver and pancreas are present in all Mammalia. The lungs agree in essential structure with those of man, as also does the heart with its four chambers—right and left auricles and right and left ventricles. The red corpuscles of the blood are *non-nucleated*, and are circular in shape except in the case of the camels. All mammals with the exception of the monotremes are viviparous, but there are considerable differences in the relations subsisting between mother and young before birth, thus leading to the division into placental and aplacental mammals. (See *Placenta.*) Man and all other mammals except the monotremes and marsupials belong to the latter division. All mammals possess mammary or milk glands, which, however, may differ chiefly in number and position throughout the class. (See *Mammary Glands.*) In the *classification* of this important group authorities differ somewhat, but the mammals may be divided into the following groups:—Man (Hominidæ); Apes and Monkeys (Simiæ); the Prosimians or Lemurs (Prosimii); the Bats (Chiroptera); the Insect-eaters (Insectivora); the Flesh-eaters (Carnivora); the Seals (Pinnipedia); the Whales and Dolphins (Cetacea); the Sea-cows (Sirenia); the Elephants (Proboscidea); the Odd-toed Ungulates (Perissodactyla); the Even-toed Ungulates (Artiodactyla); the Gnawers or Rodents (Rodentia); the Edentates (Edentata); the Marsupials, or Pouch-bearing Mammals (Marsupialia); and the Molotremes (Monotremata).

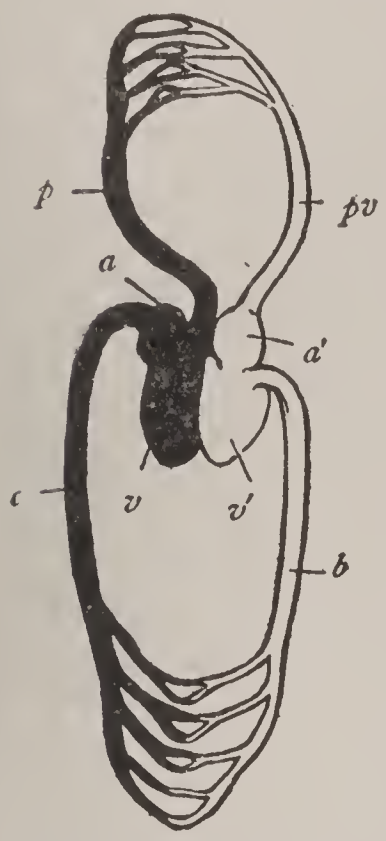


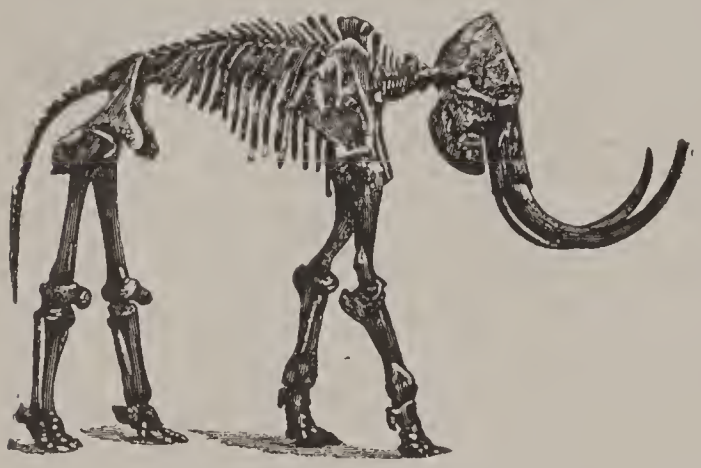
Diagram of the Circulation in a Mammal.

(The cavities containing venous blood are marked black, those containing arterial blood are left white). *a*, Right auricle; *v*, right ventricle; *p*, pulmonary artery carrying venous blood to the lungs; *pv*, pulmonary veins carrying arterial blood from the lungs; *a'*, left auricle; *v*, left ventricle; *b*, aorta carrying arterial blood to the body; *c'*, vena cava, carrying venous blood to the heart.

Mammary Glands (mam'a-ri), the milk-producing organs, the distinctive mark of the mammals. These structures present in man an essentially *lobular* structure. The lobes are divisible into smaller *lobules*, which consist ultimately of groups of vesicles which open into minute ducts converging into larger channels which lead to the milk reservoirs at the nipple. The nipple itself is composed of unstriped muscular fibers and areolar tissue. It also possesses erectile powers, and blood-vessels are in consequence freely distributed to it. These glands, save in exceptional instances, are undeveloped in the male. They are always in pairs on some part of the ventral surface of the body, but in number and position they vary much in the various groups.

Mammee Tree (ma-mē'), or West India Apricot

(*Mammæa Americāna*), nat. order Guttiferæ, a tall, handsome tree bearing a fruit about the size of a cocoanut. This has two rinds enclosing the pulp, which is firm, bright yellow, and has a pleasant taste and smell. The seeds, which are large, are used as anthelmintics, and a

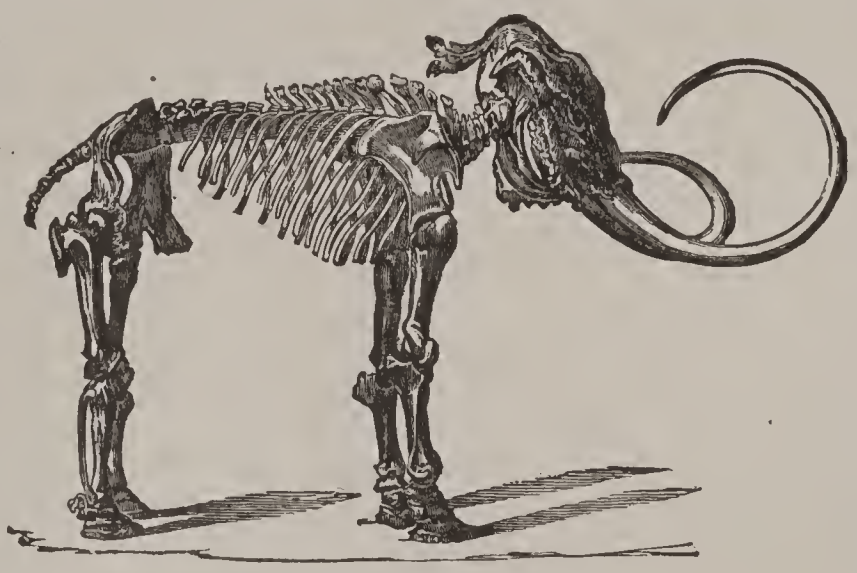


Mammoth (*Elephas primigenius*).

gum distilled from the bark is used to destroy chigoes.

Mammon (mam'un), a Syriac word used in St. Matthew as a personation of riches or worldliness. There does not appear to have been any idol in the East receiving divine honors under this name.

Mammoth (mam'uth), a species of extinct elephant, the fossil remains of which are found in European, Asiatic, and North American formations. Geologically speaking, the mammoth, or *Elephas primigenius*, dates from the Post-pliocene period. It survived the glacial period, and lived into the earlier portion of the human period; its remains having been frequently found associated with human remains, and its figure carved on bone. It appears to have been widely distributed over the northern hemisphere, but never south of a line drawn through the Pyrenees, the Alps, the northern shores of the Caspian, Lake Baikal, Kamchatka and the Stanovoi Mountains. It had large curved tusks and shaggy hair. The bones and tusks have been found in great abundance in Siberia; and an entire carcass which had been preserved in the ice and eventually thawed out, was discovered towards the close of the eighteenth century on the banks of the river Lena, in such a perfect state that the flesh was eaten by dogs, wolves and bears. Its skin was perfectly preserved, and was seen to be clothed with a furry wool of reddish color, interspersed with black hairs. The skeleton and other parts of this animal are preserved in the St. Petersburg Royal Museum. It must have been twice as bulky as the elephants at present living. Other examples have since been found.



St. Petersburg Mammoth.

Mammoth Cave, a stupendous cave in Kentucky, near Green River, about 80 miles S. S. W. of Louisville. It is one of a large series of vast caverns here formed in the limestone rock, and which are found over an area of 6000 miles in Kentucky, Tennessee and Indiana. It has been penetrated 14 miles, and has many windings and offshoots, some of them but imperfectly explored. It is a dry cave, and the remains of its stalactite and stalagmite formations are dusty and dilapidated; consequently it is more remarkable for its extent, the size of its halls, and height of its domes, than for the variety or beauty of its scenery. It contains several small lakes or rivers, the largest, Echo River, being more than half a mile long. It rises and falls according as Green River is in flood or otherwise, there being an underground connection between them. The animals of the cave include blind wingless grasshoppers, beetles, rats, etc., and the viviparous blind fish Amblyopsis.

Mammoth Trees. See *Sequoia.*

Man, the most highly organized member of the animal world. The endeavor has often been made in classification to separate man from the brute creation. One system, expressing a vast gap between the Quadrumana and man, classifies man in the order Bimana ('two-handed'), the highest division of the Mammalian class; and relegates the monkeys and apes to the lower and distinct order—that of the Quadrumana ('four-

handed'). The more recent arrangements, however, classify man and the monkeys in one order, making man the highest family or group of this order. From the purely anatomical point of view the differences which separate the anthropoid apes from man are in some respects less than those which separate these higher apes from apes lower in the scale. But the mental or psychical endowments of man oblige us to remove him far above the highest Quadrumana; and even the characters by which he is anatomically separated from the highest apes form a well marked and appreciable series. The first special characteristic of man is his erect position and bipedal progression. The lower limbs, with the feet broad and plantigrade and the well-developed heel, are devoted exclusively to progression and supporting the weight of the body; while the upper limbs have nothing to do with progression, but subserve prehension entirely. The bones of the face in man do not project forwards, but they are elongated in a downward direction; the face and forehead in the more civilized races being situated very nearly in the same plane. Similarly the development of a distinct chin is also a peculiarly human feature, and one which in the highest varieties of mankind becomes most marked. The great cranial capacity of man, or the greater size of the cranial or brain portion as compared with the facial portion of the skull, forms another noteworthy and distinctive character of the human form. The brain convolutions also are more numerous and complex than is the case with any other mammal. The teeth of man are arranged in a continuous series, and without any *diastēma* or interval. The development of hair also is very partial. The gorilla presents of all the apes the nearest approach to the human type taken in its entirety; but it differs in the relative number of vertebræ (13 dorsal and 4 lumbar, to 12 and 5 respectively in man), in the order of dental succession and in the presence of the interval or diastema, in the less prominent muscular development of the buttocks and calves, and in other minor differences. The orangs most closely approach man's structure in the number of ribs and in the form of the cerebrum, while they exhibit the greatest differences from him in the relative length of the limbs. The chimpanzees are most anthropoid in the shape of the cranium, in the arrangement and succession of the teeth, and in the length of the arms as compared with that of the legs. Of the higher apes the gibbons are those furthest removed from the human type of structure. Chief among the psychical features, or rather among the results of the operation of the principle of mind, we note the possession of the moral sense of right and wrong. The possession of an articulate language, by which he can communicate his thoughts, is also the exclusive possession of man, and draws a sharp line of separation between him and all other animals. With regard to the geological history of man, the earliest traces yet discovered belong to the Post-pliocene deposits in conjunction with existing species of shells and some extinct species of mammals. Man's advent upon the earth is consequently referred to a period much anterior to that which former limits and theological ideas prescribed. Among the modern theories regarding the origin of man may be noted those of (1) Darwin: that man is directly descended from an extinct form of anthropoid ape, with a tail and pointed ears, arboreal in its habits and an inhabitant of the Old World; further, that man has diverged into different races or subspecies, but that all the races agree in so many unimportant details of structure, and in so many mental peculiarities, that they can be accounted for only through inheritance from a common progenitor. (2) Wallace also affirms the original unity of man, and places him apart as not only the head and culminating point of the grand series of organic nature, but as, in some degree, a new and distinct order of being; maintaining that a superior intelligence has guided the development of man in a definite direction and for a special purpose, just as man guides the development of many animal and vegetable forms. (3) Carl Vogt holds a plurality of the race; adopts Darwin's idea of natural selection accounting for the origin and endowments of man, but rejects Wallace's idea of the higher controlling intelligence. (4) Mivart propounds a theory of a natural evolution of man as to his body, combined with a supernatural creation as to his soul. See also *Ethnology*, *Anthropology*, *Anthropometry*, etc.

Man, Isle of, an island in the Irish Sea, equidistant about 27 miles from England and Ireland, and 16 miles from Scotland; greatest length, N. E. to S. W., 33 miles; greatest breadth, E. to W., 12 miles; area, 227 sq. miles. There is a small island, the Calf of Man (800 acres), at the S. W. extremity of Man. A range of hills extends throughout nearly the entire length of the island, culminating in Snaefell (2024 feet). Lead and zinc are found in considerable quantities, especially the former. Fishing is

an important industry, but the manufactures are almost entirely domestic. The island is governed by an independent legislature called the Tynwald, consisting of two branches—the Governor and Council and the House of Keys. Two judges or 'deemsters' try civil and criminal cases. The Manx language, a Celtic dialect, is still in use, although all the inhabitants speak English. The principal towns are Douglas, Castletown, Peel and Ramsey. This island was taken by the Norwegians in 1098, sold to the Scots in 1266, and was repeatedly occupied by the English and Scots up till 1344, when it remained in possession of the former. It was later held as a feudal sovereignty by the earls of Derby, and more recently by the dukes of Athole, from whom it was purchased for the British crown in 1764 for £70,000; and finally, in 1829, certain remaining privileges were ceded by the duke on receiving an award of £416,000. Pop. (1911) 52,034.

Manaar (man-a-ȧr′), GULF OF, a part of the Indian Ocean between Ceylon and Hindustan, separated from Palk's Strait by a reef called Adam's Bridge, which runs between the two islands of Manaar (18 miles by 2½ miles) and Ramisseram. The gulf is noted for its pearl fisheries.

Manacor (mä-na-kōr′), a town of Spain, in the island of Majorca. Pop. 12,408.

Managua (mȧ-nä′-gwȧ), a town in Central America, capital of the state of Nicaragua, near the southwest shore of the lake of same name, 32 miles S. S. W. of Leon. Pop., with the district, about 30,000.—The lake, about 38 miles long and 16 broad, discharges itself into that of Nicaragua.

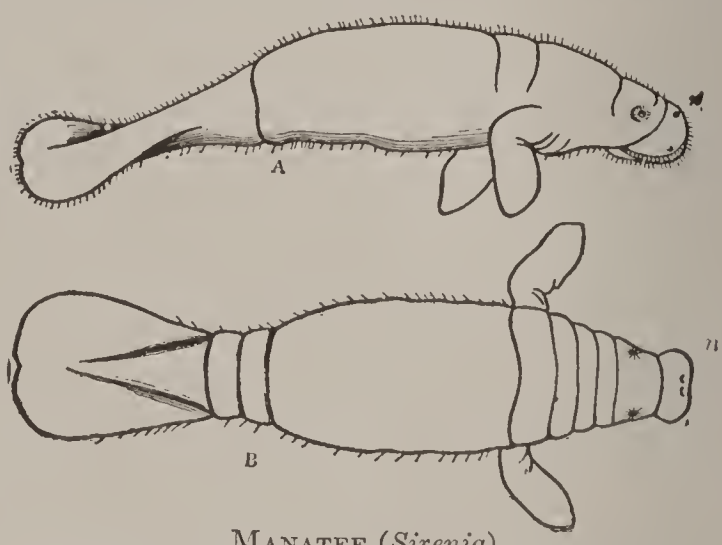
Manakin (m a n′ a - k i n), the name given to the dentirostral insessorial birds forming the subfamily Piprinæ. They are generally small and of brilliant plumage, and are mostly confined to South America, a few species being found in Central America and Mexico. The typical genus is *Pipra*, which includes the bearded manakin (*P. Manăcus*), and several others. An allied species is the beautiful orange manakin or cock-of-the-rock (*Rupicŏla aurantia*).

Manáos (mȧ-nä′oosh), a town of Brazil, capital of province Amazonas, on the Rio Negro. It has a large export trade in India rubber, cacao, dried fish, Brazil nuts, etc. Pop. 40,000.

Manassas. See *Bull Run.*

Manasseh (ma-nas′se), (1) e l d e s t son of Joseph, born in Egypt. His descendants formed a tribe, which, in the Promised Land, was settled half east of the Jordan and half to the west of this river. (2) King of Judah, son of Hezekiah, whom he succeeded at twelve years of age, 697 B.C. He became an open idolater; was taken captive to Babylon; ultimately repented and was restored to his kingdom. He reigned for fifty-five years.

Manatee (man-a-tē′), the sea-cow or l a m a n t i n, a gregarious aquatic mammal of the genus *Manātus*, order Sirenia, found on the coasts of



MANATEE (*Sirenia*).

A, Side view of young *Manātus Americānus*. B, Same from above. *n*, Nostrils.

South America, Africa, and Australia. They generally frequent the mouths of rivers and estuaries, and feed on algæ and such littoral land vegetation as they can reach at high tide. Their anterior limbs or swimming paws are furnished with nails, by means of which they drag themselves along the shore. They are large awkward animals, attaining a length of 8 to 10 feet as a rule, but sometimes growing to 20 feet. The skin is of a grayish color, sparsely covered with hairs. Their flesh is excellent, and they furnish a soft, clear oil which does not become rancid. There are several species, the principal being the American manatee (*M. Americānus*), which inhabits the shallow waters of the east coasts of South and North America, and the African manatee (*M. Senegalensis*). The dugong (which see) belongs to the same order.

Manby (man′bi), CAPTAIN GEORGE WILLIAM, born in Norfolk in 1765; died in 1854. About 1808 he invented the apparatus known by his name for saving life from shipwrecked vessels near the coast, and was rewarded with about £7000. See *Life-rockets.*

Mancha, La (lä-män′chȧ), an ancient province of Spain, in New

Castile, forming the chief part of the modern province of Ciudad-Real; famous as the scene of Don Quixote's adventures.

Manche (mänsh), La, a department of Northern France, bounded on the W., N., and N. E. by the English Channel, and landward by the departments of Calvados, Orne and Mayenne. It is about 80 miles long by 30 broad, and has an area of 2263 sq. miles. Pop. (1906) 487,443.

Manchester (man'ches-tėr), a town of Hartford Co., Connecticut, 9 miles E. N. E. of Hartford. Its manufactures include silks, paper, woolens, typesetting machines, needles, soap, etc. Silk-making is the principal industry. Pop. 13,641.

Manchester, a district of Chesterfield Co., Virginia, on the James River, opposite Richmond. It has coal-mining interests and manufactures of cotton, iron, paper, nails, flour, tobacco, etc. Pop. 7594.

Manchester, a city of Hillsborough Co., New Hampshire one of the capitals of Hillsborough Co., on the Merrimack River, at the Amoskeag Falls, 18 miles S. of Concord. It is one of the chief manufacturing places in New England having the advantage of an unlimited supply of water-power from the falls of the Merrimack. It has extensive cotton and woolen mills, one of them employing over 8000 hands. There are also large hosiery mills, shoe factories, paper mills, iron works and many other industries. Pop. 70,063.

Manchester, a municipal and parliamentary borough and city of Lancashire, England, 188 miles N. N. W. from London by railway, and 32 miles east by north of Liverpool. The old town of Manchester proper, and the large and populous townships of Hulme, Chorlton, Ardwick, Cheetham, etc., are situated on the east or left bank of the Irwell, while the extensive borough of Salford is situated on the right bank; but communication by a dozen bridges serves to make them practically one city. The Manchester charter of incorporation dates from 1838; in 1832 it was made a parliamentary borough, and in 1852 it became a city. It has many important and handsome public buildings and many fine streets. The center of the town is largely occupied by immense piles of warehouses and offices, while the factories and other manufacturing works are chiefly in the outskirts. Among the chief public buildings are the town hall or municipal buildings in the Gothic style, finished in 1877 at a cost of £1,053,264; the Assize Courts, also a fine specimen of modern Gothic, behind them being a well-arranged prison; the Royal Exchange; the Royal Infirmary; the old town-hall, in which the Free Reference Library is now located; the Free Trade Hall, used for public meetings: the Royal Institution, etc. Among the churches the first place is due to the cathedral, a fine specimen of Perpendicular Gothic, built in 1422; but the soft stone of which it is built having necessitated numerous re-

Manchester—The Royal Infirmary and Piccadilly, from the Queen's Hotel.

pairs, the edifice has a comparatively new appearance. The chief educational institution is Owens College, the nucleus of the Victoria University, founded in 1846 by a bequest of upwards of £100,000 from John Owens. (See *Owens College.*) Cheetham's Hospital was founded under the will of Humfrey Cheetham in 1653 for the education of poor boys. Attached to the institution is a library of nearly 40,000 volumes, the first free library in Europe. The city has also a number of denominational colleges—the Lancashire Independent College, the Primitive Methodist College, St. Bede's Roman Catholic College, etc. The Grammar School was founded in 1520, and has exhibitions at Oxford or Cambridge. There are numerous literary, scientific and philosophical societies, some of them of considerable standing. The Free Library, established in 1851, has a reference library in the main building of 200,000 volumes, and six branches with upwards of 100,000 volumes. Benevolent and charitable institutions are numerous. For open-air recreation there are the botanical and horticultural garden; the Queen's Alexandra and Philip's parks; the Belle Vue zoological gardens; and Peel Park, Salford, with an excellent museum, and covering an area of 40 acres. Among the public monuments the most noteworthy is the Albert Memorial in front of the town hall. The chief manufacture is cotton, though woolen and silk fabrics are also produced. Metal manufactures, engineering, and the making of all kinds of machinery employ many hands. Railway communication is of the most extensive kind, the largest stations being Victoria, London Road, Exchange and Central. The commerce of the town has been much facilitated and extended by the completion of the Liverpool and Manchester ship canal, opened January 1, 1894. Its length is 35½ miles; its width at water level being 172 feet, at bottom 120 feet; depth 26 feet; dock accommodation 133 acres. The manufacture of gas, supply of water, working of tramways, etc., are directly or indirectly in the hands of the corporation, and an extensive scheme is being proceeded with for bringing an improved water supply from Thirlmere in the Lake District.—Manchester is the *Mancunium* of the Romans. Its history is legendary down to the tenth century, when it was devastated by the Danes. In the twelfth century the woolen manufactures began to develop, and in 1301 it received municipal liberties and privileges. During the civil war the town suffered much at the hands of both parties. The introduction of machinery in cotton-spinning towards the end of the eighteenth century gave power and direction to the trade of modern Manchester, and its progress since has been extraordinarily rapid. A temporary check resulted from the Civil war in America, which led to a cotton famine in 1862, causing the deepest distress in South Lancashire. Pop. of Manchester, (1911) 714,427; of Salford, 231,380.

Manchester Party or School, the name given to an English political party whose exertions were particularly directed to the development and thorough carrying out of the principles of free trade. They had their chief seat in Manchester, and Messrs. Cobden and Bright were the principal leaders. From their advocating non-intervention in foreign affairs, of arbitration instead of war, etc., they were sometimes called the 'peace-at-any-price' party.

Manchineel (man'ki-nēl), a lofty tree (*Hippomăne Mancinella*) belonging to the natural order Euphorbiaceæ. It is a native of the West India Islands and Central America, and is valuable for cabinet work. It possesses poisonous properties, which, however, have been greatly exaggerated. The milky juice when dropped upon the skin produces a sensation of severe burning, followed by a blister.

Manchuria, or MANCHOORIA (man-chö'ri-a; Chinese *Shing-King*), a Chinese territory occupying the northeastern section of the empire. It is bounded on the north and east by the Amur or Amoor and Usuri, which separate it from Russian territory; on the west by the provinces of Irkutsk, Mongolia and Chih-le; on the south by the Gulf of Leaotong, the Yellow Sea and Corea. It is divided into three provinces, Shing-King, Feng-Tien, or Leaotong in the south, of which Mukden is the capital; Kirin in the center, with a capital of the same name; and He-Lung-Kiang in the north, with capital Tsitsihar. On the southern extremity of the peninsula is the historically famous harbor of Port Arthur. The total area is about 360,000 sq. miles. The Manchus are a hardy race, and their country has long been the great recruiting ground for the Chinese army; but of late years large numbers of Chinese proper have flocked into it, so that now they by far outnumber the native race. In the seventeenth century the Manchus invaded China and placed their leader's son upon the throne. From that time until February, 1912, the Manchu dynasty continued to reign in China, the Manchu language becoming

the court and official language. The country is mountainous, but on the whole fertile. The climate is good, for though the winters are severe they are healthy and bracing. The vast forests of the north are rich in useful timber of all kinds. The principal food crops are pulse, millet, barley and wheat. The vine, indigo, cotton, opium, tobacco, etc., are cultivated. In 1898 Russia obtained from China a lease of the harbors of Port Arthur and Tal-lien-wan, at the latter of which the city of Dalny was built. The encroachments of Russia in Manchuria led in 1904 to a disastrous war with Japan, the armies of the latter capturing Port Arthur, Dalny and Mukden. By the terms of the treaty of 1905 Russia agreed to withdraw from Manchuria, while Japan restored that country to China. The Chinese revolution of 1911-12 overthrew the Manchu dynasty in China, and a republican government succeeded the empire.

Manchus, or MANCHOOS. See preceding article.

Mandalay (man'da-lā), the capital of Burmah from 1860 to its annexation by India in 1886. It is situated in a level plain about 2 miles from the left bank of the Irrawaddy. It consists of four concentric quadrangles, of which under native rule the innermost contained the palace, etc.; the second, which was surrounded by a moat and walls, contained the houses of the government officials, soldiers, etc.; while outside dwelt the general body of the people. Since the British occupation the town has suffered severely from fires and floods. Pop. 183,816.

Mandamus (man-dā'mus), in law, a command or writ issuing from a superior court, directed to any person, corporation, or inferior court, requiring them to do some act therein specified which appertains to their office and duty, as to admit a person to an office or franchise, or to deliver papers, etc.

Mandarin (man'da-rin), the term applied by Europeans to government officials of every grade in China. The Chinese equivalent is *kwan*, which signifies literally a public character.

Mandarin Duck, a beautiful species of duck (*Anas* or *Dendronessa galericulata*) from Eastern Asia, the males of which exhibit a highly variegated plumage of green, purple, white and chestnut, the females being colored a more sober brown. The male loses his fine plumage in summer.

Mandats (mäṇ-dä), a kind of paper money issued during the French revolution, differing from the *assignats* (which see) insofar as specific pieces of property, enumerated in a table, were pledged for the redemption of the bills, while the assignats furnished only a *general* claim.

Mandavi. See *Mandvi.*

Mandelay. See *Mandalay.*

Mandeville (man'de-vil), BERNARD, poet and philosophical writer, born in Holland about 1670; died in 1733. His most celebrated production is the *Fable of the Bees, or Private Vices Public Benefits*, the first part of which appeared in 1723, and the second in 1728. It created quite a sensation, and called forth replies from Bishop Berkeley, William Law, and others. Among his other works are *Free Thoughts on Religion* (1720), and *Origin of Honor* (1732).

Mandeville, SIR JOHN DE, the name adopted by the compiler of an extraordinary book of travels originally written in French between 1357 and 1371. An English version was made from the French MS. about the beginning of the fifteenth century. That part of the book which treats of the Holy Land may be a record of the author's experience, but the greater part is taken from the travels of the friar Odoric, written in 1330, and other sources. The first printed English edition is that of Wynkyn de Worde, 1499; and the best that of Halliwell, 1839, reprinted 1866. Mandeville had long the reputation of being the 'father of English prose.' He was said to have been born at St. Albans about 1300, set out on his travels in 1322, returned in 1357, died and was buried at Liège; but much of his personal history is mere invention, and the very name of the compiler of the travels is a matter of doubt.

Mandible (man'di-bl), the term more especially applied to both the upper and under jaws of birds. In mammals it is applied only to the under jaw, and in the Articulata to the upper or anterior pair of jaws, which are generally solid, horny, biting organs. It is also applied to the beak of the Cephalopods.

Mandingoes (man-ding'ōs), a negro tribe of West Africa, remarkable for their intelligence, and generally for the advances they have made in civilization. The original country of this people, who are now spread over a great portion of West Africa, was the north slope of the high tableland of

Senegambia. They are nominally Mohammedans, are keen traders, work iron and gold, manufacture cotton cloth and leather, and cultivate a variety of crops. They live in small independent states, their clay-built walled towns often containing about 10,000 inhabitants.

Mandioc. See *Cassava.*

Mandogarh. See *Mandu.*

Mandoline (man'du-lin), a musical instrument of the guitar kind. There are several varieties, each with different tunings. The Neapolitan has four strings tuned like those of the violin G, D, A, E; the Milanese has five double strings (each pair in unison) tuned G, C, A, D, E. A plectrum is used in the right hand, the fingers of the left stopping the strings on the fretted finger-board.

Mandrake (man'drāk) the popular name of plants of the genus *Mandragŏra*, nat. order Solanaceæ, natives of south and east of Europe and Western Asia, and not uncommon in British gardens. *M. officinālis* has large tap-roots; the leaves radical, sessile, ovate, entire and waved. There is no stem; but the flowers, which are white with a bell-shaped corolla, stand upon simple stalks. The fruit is a large two-celled berry of an orange color, containing many kidney-shaped seeds. The root possesses narcotic qualities, and from its occasional resemblance to the human figure was formerly supposed to possess an inferior kind of animal life, and to shriek when torn up. It was believed to have many magical virtues, and to be an aphrodisiac and a cure for barrenness (Gen., xxx. 14, 16).

Mandrill (man'dril), a species of baboon (*Cynocephălus mormon*), which is distinguished by the short or rudimentary tail, by the elongated dog-like muzzle, and by the presence of buttock callosities which are generally brightly colored. The mandrills inhabit Western Africa, where they associate in large troops. Full-grown males measure about 5 feet; they are exceedingly strong and muscular, and fierce in disposition. They have cheek protuberances colored with stripes of brilliant red and blue.

Mandu (man'du), or MANDOGARH, a deserted town in Dhar State, Central India, the ancient capital of Malwah, 38 miles S. W. of Indore. It is celebrated for its magnificent ruins, including the great mosque, the finest specimen of Afghan architecture in India; a marble mausoleum of one of the kings of Malwah, a royal palace, etc. It occupies about 8 sq. miles of ground.

Manduria (man-dö'rē-a), a town of Southern Italy, province of Lecce, 54 miles N. N. W. of Otranto. Pop. 13,190.

Mandvi (mänd'vē), a seaport in the state of Cutch, Bombay, India. It is situated on the Gulf of Cutch, 36 miles S. of Bhuj, the capital of the state, and is a port of call for British-India steamers. Pop. 24,683.

Maneh (ma'ne; Heb.), a Hebrew weight used in estimating gold and silver, and believed to contain a hundred shekels of gold and sixty of silver.

Manes (mā'nēz), among the Romans, the souls or ghosts of the dead, to whom were presented oblations of victims, wine, milk, garlands of flowers, etc. A similar worship of ghosts or ancestral spirits prevails among many races.

Manetho (man'e-thō), an Egyptian priest and historian, who belonged to the town of Sebennytus in Lower Egypt, and lived in the reign of Ptolemy Soter, about the beginning of the third century B.C. He wrote a *General History of Egypt*, which was divided into three books, and beginning with the fabulous or mythological history of Egypt, ended with the 30th dynasty, when Egypt fell under the rule of Alexander the Great. The history itself is lost, but the lists of the dynasties are preserved in Julius Africanus and Eusebius, and some fragments of the work are to be found in Josephus in his work against Apion.

Manfred (man'fred), King of the Two Sicilies; born in 1231; died in 1266. A natural son of the Emperor Frederick II, he was regent in Italy first for his brother and then for his nephew, on whose rumored death he was crowned king. He refused to resign in favor of his nephew, was excommunicated, and his kingdom of the Sicilies given as a papal fief to Charles of Anjou. The latter marched into Naples and gained a victory, in which Manfred was killed.

Manfredonia (män-frā-dō'nē-ä), a seaport of South Italy, province of Foggia, on the gulf of same name, at the foot of Mount Gargano, 22 miles northeast of Foggia. It was founded by King Manfred about 1263. Pop. 11,549.

Mangalore (man-ga-lōr'), a seaport and military station of India, in South Canara district, Madras. It is a clean and prosperous town, and has large exports of coffee. There is a Roman Catholic College, and the Basel Lutheran Mission has its headquarters here. Pop. 44,108.

Manganese (man′ga-nēz; chemical symbol Mn, atomic weight 55), a metal of a dusky-white or whitish-gray color, very hard and difficult to fuse. Exposed to air it speedily oxidizes; it decomposes water with evolution of hydrogen. The common ore of manganese is the dioxide, black oxide, or peroxide (MnO_2), the pyrolusite of mineralogists, a substance largely employed in the preparation of chlorine for the manufacture of bleaching powder or chlorate of lime. It is employed in the manufacture of plate glass, to correct the yellow color which oxide of iron is apt to impart to the glass. It is also used in making the black enamel of pottery. Other oxides are the protoxide (MnO), sesquioxide (Mn_2O_3), the red oxide (Mn_3O_4), and permanganic acid (Mn_2O_7). The latter is only known in solution or in a state of combination. It is largely used in analytical chemistry. Metallic manganese is obtained by reduction of the oxide by means of heat and finely divided carbon. It resembles iron in appearance and properties; is a constituent of many mineral waters, and is employed in medicine. In steel manufacture it is used in certain proportions with advantage as regards the ductility of the steel and ability to withstand forging, and in other manufacturing operations it forms an important element. It is found in the United States, which yields an annual product at times above 300,000 tons.

Manganese Bronze, a kind of bronze in which the copper forming the base of the alloy is mixed with a certain proportion of ferro-manganese, and which has exceptional qualities in the way of strength, hardness, toughness, etc. Various qualities are manufactured, each suited for certain special purposes. One quality, in which the zinc alloyed with the treated copper is considerably in excess of the tin, is made into rods, plates, etc., and when simply cast is said to have a tensile strength of about 24 tons per square inch, with an elastic limit of from 14 to 15 tons. Another quality used in gun-founding has all the characteristics of forged steel without any of its defects. Another quality is in extensive use for toothed wheels, gearing, brackets, and all kinds of machinery supports. From its non-liability to corrosion it is largely employed in the manufacture of propellers.

Manganese-brown. See *Cappaugh-brown.*

Manganite (man′ga-nīt), one of the ores of manganese, the hydrated sesquioxide. It is also called hydrated sesquioxide or *Gray Manganese-ore.* It is used in the manufacture of glass.

Mange (mānj), a cutaneous disease to which dogs, horses, cattle, etc., are liable. It resembles in some measure the itch in the human subject, ordinary mange being due to the presence of a burrowing parasite. Both local application and internal remedies are used in its cure.

Mangel-wurzel (mang′gl wur′zl), a large-rooted species of beet (*Beta vulgāris macrorhīza*) extensively cultivated in Europe for feeding cattle. It requires a liberally manured generous soil, which in favorable circumstances may grow from 70 to 80 tons per acre. It is produced largely in the United States.

Mango (man′gō), the fruit of the mango tree (*Mangifĕra indica*), nat. order Anacardiaceæ, a native of tropical Asia, but now widely cultivated throughout the tropics. Fine varieties produce a luscious, slightly acid fruit much prized for dessert. The large flat kernel is nutritious, and has been cooked for food in times of scarcity.

Mango-bird, the Indian oriole (*Oriŏlus Kundoo*).

Mango-fish, a fish of the Ganges (*Polynēmus risua*), about 15 inches long, and highly esteemed for food. It is of a beautiful yellow color, and the pectoral fins have some of the rays extended into long threads. It ascends the Ganges in April and May, and is then sought after as a great delicacy.

Mangold-wurzel. See *Mangel-wurzel.*

Mangosteen (mang′gō-stēn), a tree of the East Indies, *Garcinia Mangostāna*, nat. order Guttiferæ. The tree grows to the height of 18 feet, and the fruit is about the size of an orange, and contains a juicy white pulp of a delicate, sweet, subacid flavor. It is esteemed one of the most delicious and wholesome of all known fruits.

Mangrove (man′grōv; *Rhizophŏra*), a genus of plants (type of the family Rhizophoraceæ) consisting of trees or shrubs which grow in tropical countries along the muddy beaches of low coasts, where they form impenetrable barriers for long distances. They throw out numerous roots from the lower part of the stem, and also send down long slender roots from the branches, like the Indian banyan tree. The seeds germinate in the seed-vessel, the root growing downward till it fixes itself in the mud. The wood of the *R. Mangle* is dark red, hard and durable, and the bark is used for

tanning. The fruit is said to be sweet and edible, and the fermented juice is made into a kind of light wine. The name is also given to the genus *Avicennia* of the verbena family, which occupies large tracts of shore in tropical countries, extending as far south as New Zealand and Tasmania.

Mangrove Tree.

Manhattan (man-h a t'a n), a city, capital of Riley Co., Kansas, on the Kansas River, 52 miles W. of Topeka. It is the seat of the Kansas Agricultural College. Pop. 5722.

Manhattan, Borough of, Greater New York. It formerly constituted New York City. See *New York.* Pop. 2,331,542.

Manhattan Island, New York, at the mouth of Hudson River, and bounded on the north by Spuyten Duyvil Creek (now the Harlem ship canal), is about 13 miles long and 2¼ wide, and contains the principal business and residential section of the city of New York. It rises to an elevation of about 250 feet in its northern section, and is almost completely built over, with the exception of the extreme northern section.

Manhole (man'hōl), an opening into a drain, boiler, tank, or other enclosure in the earth or elsewhere, through which a man may enter for examination, cleaning, or repair.

Manichæism (man-i-kē'izm), a great religious system which sprung up in western Asia, near the close of the third century, of Semitic origin, but which adopted many Christian elements. It lingered on through persecution until the middle ages.

Manicure (man'i-kūr), professional care and treatment of the hands, especially the nails. A manicurist is the one who professionally engages in this duty.

Manifest (man'i-fest) is a document signed by the master of a vessel at the place of lading, to be exhibited at the custom-house, containing a specific description of the ship and her cargo, with the destination of the ship and of each package of the goods, etc.

Manila, or Manilla (ma-nil'a), the capital city of the island of Luzon and of the Philippine Islands, lies on the bay of the same name, and at the mouth of the river Pasig. It consists of an old fortified city with extensive suburbs, in which are the mass of the population, and the business premises, factories, and residences of the European inhabitants. Manila is the center of commerce of the Philippines, and exports sugar, tobacco, cigars and cheroots, indigo, Manila hemp, coffee, mats, hides,

trepang, rice, etc. It imports British and United States cloths, hardware, etc., and a great variety of articles, tea, pottery, etc., from China. The manufactures consist chiefly of cigars and cheroots, and hemp and cotton fabrics. Manila was founded by Miguel Lopez de Legaspé, the conqueror of the Philippine Islands, in 1571. It has frequently suffered from earthquakes, one of the most disastrous occurring in 1863. This city, formerly the capital of the Spanish Philippines, was captured by the United States in the war with Spain of 1898, and is now the center of the American government of the islands. Pop. 219,928.

Manilla, or Manila Hemp. See *Abaca.*

Man'ioc. See *Cassava.*

Maniple (man'i-pl), in the Roman Catholic and some other churches, one of the sacred vestments, being an ornament worn by the priest above the left wrist at the celebration of the eucharist. It is now of the same width and color as the stole and the vestment or chasuble, fringed at the ends,

and generally about 1¼ yards in length. See *Chasuble.*

Manipur (man-i-pör′), a native state of Northeastern India, consisting principally of an extensive valley in the heart of the mountainous country lying between Assam, Cachar, Burmah and Chittagong; area, 8300 sq. miles; pop. 284,465.

Manis (ma′nis), a genus of edentate mammals covered with large, hard, triangular scales with sharp edges, and overlapping each other like tiles on a roof; often called *Scaly Lizards, Scaly Ant-eaters,* or *Pangolins.* See *Pangolin.*

Manisa (mä′nē-sa; anciently *Magnesia*), a town in Asiatic Turkey. It was an important town in the middle ages, and is now a busy center of trade. Pop. about 35,000.

Manistee (man-is-tē′), a city, capital of Manistee County, Michigan, on Lake Michigan, at the mouth of the Manistee River, 45 miles s. w. of Traverse City. It is an important center of lumber manufacture, having many saw and shingle mills, also ironworks, shirt, watch and furniture factories, etc. Fruit-growing is a large industry. Pop. 12,381.

Manitch, MANYTCH (man′itch), a river in South Russia, which in its course connects a series of long narrow salt lakes, and joins the Don near Tcherkask. It has been proposed to utilize it in the construction of a canal to join the Sea of Azov and the Caspian.

Manito (man′i-tō), MANITOU, among certain of the North American Indians, a name given to whatever is an object of religious awe or reverence, whether a good or evil spirit or a fetish. Two manitos or spirits are spoken of by preëminence, the one the spirit of good, the other the spirit of evil.

Manitoba (man-i-tō-bä′), a province of the Dominion of Canada, bounded on the south by the United States, on the north and east by the N. W. Territories, east by Ontario, and west by Saskatchewan. It occupies a position nearly in the center of the North American continent, and extends from 49° to 52° 50′ N. lat.; and from 89° to 101° 20′ W. lon.; area, 73,950 sq. miles. The climate is warm in summer, but very cold in winter. The summer mean is about 66°, but in winter the thermometer sinks to 30°, 40°, and sometimes 50° below zero, though this severe cold is mitigated by a clear dry atmosphere. The summer months are part of May, June, July, August and September. The principal rivers are the Assiniboine and the Red River, the latter having the greater part of its course in the United States. The largest lakes are Winnipeg, Winnipegosis and Manitoba, the two former being only partially included within the boundaries of the province. The greater part of the province consists of level treeless prairie land, covered with a rich vegetable growth in summer. The banks of the streams, however, are lined with a timber belt extending from about half a mile to ten miles back. The soil is generally a rich black mold, resting partly on a limestone formation, and partly on a thick coat of hard clay. Wheat, oats, barley, Indian corn, hops, flax, hemp, and all kinds of garden vegetables produce excellent crops. For wheat growing Manitoba presents peculiar advantages, and the production is large. Potatoes and all other root-crops thrive well, and the prairie grasses furnish good hay. Game is abundant, and the rivers and lakes teem with fish. Lignite is found and the mountains give promise of considerable mineral wealth. The public affairs are administered by a lieutenant-governor, an executive council, and a legislative assembly elected for four years. The school system established by law is entirely denominational, and is supported by local assessments, supplemented by legislative grants. The capital of the province is Winnipeg, situated at the junction of the Assiniboine and Red rivers; other towns are Portage la Prairie, Brandon, Selkirk and Emerson. The nucleus of Manitoba was the Red River Settlement established in 1812, but little progress was made till the territory became part of Canada in 1870. The trade of the province has been greatly increased since 1878, when Winnipeg was connected with the railway system of the United States; and the construction of the Canadian Pacific Railway, which crosses the province from east to west, and of other roads of recent construction, has added materially to its progress and prosperity. Pop. (1911) 455,614.

Manitoba Lake, a lake of Canada, province of Manitoba, 30 or 40 miles s. w. of Lake Winnipeg, about 120 miles in length by about 25 miles in breadth; area, 1900 sq. miles. It receives the waters of several lakes at its northern extremity, and at its southern White Mud River. It discharges into Lake Winnipeg through the Dauphin River.

Manitou. See *Manito.*

Manitoulin Islands (m a n-i-t ö′-lin), a group of North American islands in Lake Huron, consisting of Grand Manitoulin, 80

miles long by 5 to 30 broad, Little Manitoulin, and Drummond Island. The two former belong to Canada, the latter to the United States (Michigan). Pop. about 2000, more than one-half being Indians.

Manitowoc (man-i-tō-wok′), a city of Wisconsin, capital of county of same name, on the west shore of Lake Michigan, 77 miles N. of Milwaukee. It has a good harbor, with shipping docks, and shipbuilding is an active industry. There are large breweries and cigar factories, extensive iron-works, a large glue factory, also flour mills, tanneries, brickyards, etc. There is here a Polish Orphan Asylum and a county insane asylum. Pop. 13,027.

Mankato (man-kā′tō), a city, capital of Blue Earth County, Minnesota, on the Minnesota River, at head of navigation. It is a manufacturing city, its industries including furniture, pump, plow and carriage works, foundries, breweries, flour and knitting mills, etc. There are fine stone quarries in the vicinity. It has a State normal school. Pop. 10,365.

Mann, HORACE, educator, born at Franklin, Massachusetts, in 1796; died in 1859. The revival of the common school system was the work of his life, and his reports of the ignorance of the people and the incompetence of the teachers stirred the people strongly to the need of reform. He was secretary of the Massachusetts Board of Education for 11 years, and through his influence important changes were made in the school system of the State. He was elected to Congress in 1848, and became president of Antioch College in 1852. His labors have been acknowledged by giving him a place in the New York Hall of Fame.

Manna (man′a), the sweet concrete juice which is obtained by incisions made in the stem of a species of ash, *Fraxinus Ornus*, a native of Sicily, Calabria, and other parts of the south of Europe. The manna of commerce is collected in Sicily, where the manna-ash is cultivated for the purpose in regular plantations. The best manna is in oblong pieces or flakes of a whitish or pale-yellow color, light, friable and somewhat transparent. It has a slight peculiar odor, and a sweetish taste mixed with a slight degree of bitterness, and is employed as a gentle laxative for children or persons of weak habit. It is, however, generally used as an adjunct to other more active medicines. Other sweetish secretions exuded by some other plants growing in warm and dry climates, as the *Eucalyptus mannifĕra* of Australia, the *Tamarix mannifĕra* or *gallica* of Arabia and Syria, are considered to be kinds of manna. Small quantities of manna, known under the name of *Briançon manna*, are obtained from the common larch. In Scripture we are told that a substance called manna was miraculously furnished as food for the Israelites in their journey through the wilderness of Arabia. Some persons identify it with the saccharine substance yielded by the *Tamarix mannifĕra*.

Manna-ash. See *Manna*.

Manna-croup, a granular preparation of wheat-flour deprived of bran. It consists of the large hard grains of wheat-flour retained in the bolting-machine after the fine flour has been passed through its meshes. It is used for making soups, puddings, etc. See also *Manna Grass*.

Manna Grass, the *Poa* or *Glyceria fluitans*, a grass growing in wet places throughout the temperate regions of the globe. It affords food for cattle, and the seeds, called *Polish manna*, *manna seeds* and *manna-croup*, are used in some countries in soups and gruels.

Mannheim (mân′hīm), a town of Germany, grand-duchy of Baden, on the right bank of the Rhine, near the confluence of that river with the Neckar. It is regularly laid out in square blocks, and is surrounded by a promenade on the site of the ancient ramparts. It is connected by a bridge with Ludwigshafen, a thriving town on the opposite bank of the Rhine, in Bavarian territory. It has an extensive harbor and docks, and is the chief commercial town on the Upper Rhine. Industries include the manufacture of machinery, sugar, chemicals, wall-paper, tobacco, etc. The principal buildings are the Schloss or castle, the theater, arsenal, Jesuits' church, etc. The town has suffered severely from war; in the siege of 1795 only a few houses were uninjured. Pop. (1910) 193,379..

Manning (man′ing), HENRY EDWARD, CARDINAL, born at Totteridge, Hertfordshire in 1808; educated at Harrow and Balliol College, Oxford; rector of Lavington and Graffham, Sussex (1834-40); archdeacon of Chichester (1840-51). He took an active part in the Tractarian movement, and in 1851 joined the Church of Rome, and was ordained priest. On the death of Cardinal Wiseman he succeeded him as Archbishop of Westminster (1865), and ten years after he was made cardinal. Social and

philanthropic questions received much of his attention; he was an ardent supporter of total abstinence, and was a member of the commissions on the housing of the poor and on education. He wrote *The Temporal Power of the Pope; The True Story of the Vatican Council*, and *The Four Great Evils of the Day*. He died in 1892.

Mannite (man'īt; $C_6H_{14}O_6$), a peculiar variety of sugar obtained from manna, and also found in the juices which exude from several species of cherry, in the fermented juice of beet-rot, carrots, etc.

Manœuvres (ma-nö'vėrz), the movements and evolutions of any large body of troops or fleet of ships, for the purpose of testing the efficiency of the various bodies of the service under the conditions of actual warfare, and for the purpose of instructing officers in tactics, and officers and men in their various duties. For these purposes mimic warfare is carried on periodically under the name of military or naval manœuvres by several of the leading powers.

Man-of-war Bird. See *Albatross.*

Manometer (ma-nom'e-tėr; Gr. *manos*, rare, *metron*, measure), an instrument to measure or show the alterations in the rarity or density of the air, or to measure the rarity of any gas. Such instruments as measure the elastic force of steam are also properly termed manometers. They are variously constructed.

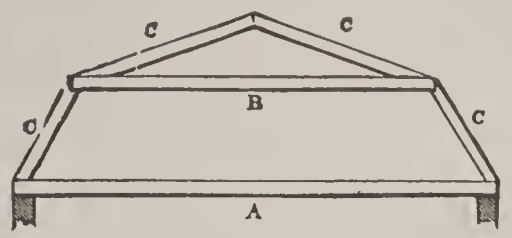
Manor (man'ur), originally a piece of territory held by a lord or great personage, who occupied a part of it, as much as was necessary for the use of his own immediate family, and granted or leased the remainder to tenants for stipulated rents or services. Manors were also called baronies, as they still are lordships, and the lord was empowered to hold a domestic court called the *court baron* for punishing misdemeanors, settling disputes, etc., within the manor.

Manresa (man-rā'sa), a city in Spain, province of and 34 miles northwest of the city of Barcelona. It is well built, surrounded by old walls, commanded by a fort, and has considerable manufactures, etc. Pop. 23,252.

Mans, Le (lė mäṇ), a town of France, capital of department Sarthe, on a height above the Sarthe, 115 miles southwest of Paris. The principal edifice is a fine Gothic cathedral, in part supposed to be of the tenth century. The nave is in the Romanesque style; the choir (104 feet high) is Gothic of the thirteenth century. The principal manufactures are woolen and linen goods, machinery, leather, etc. Le Mans existed in the time of the Romans under the name of Cenomani; it was the birthplace of Henry II, the first of the Plantagenet kings of England; it witnessed the final dispersion of the Vendean army in 1793; and was the scene of the defeat of the French army under Chanzy (to whom a monument has been erected) by the Germans under Prince Frederick Charles, January, 1871. Pop. 52,902.

Mansard (mȧn-särd), François, a French architect, born at Paris in 1598; died in 1666. The roof known by his name was his invention. (See *Mansard Roof.*) His nephew, Jules Hardouin, who assumed his name (1645-1708), attained great fame as an architect. The Palais de Versailles, Hôtel des Invalides, the Place Vendôme, and other works of the reign of Louis XIV, were from his designs.

Mansard Roof, a roof formed with an upper and under set of rafters on each side, the under set approaching more nearly to the perpendicular than the upper.



Mansard Roof.

A, Tie-beam. B, Collar-beam. CC, Rafters.

Manse (mans), in Scotland, the dwelling-house of a parish minister of a rural parish. Every minister of a rural parish (*quoad omnia*) is entitled to have a manse erected and upheld by the heritors, but the ministers of royal burghs have properly no such right, unless where there is a landward district belonging to the parish in which the burgh lies. The term is sometimes loosely applied to the dwelling-house of dissenting ministers.

Mansel (man'sel), Henry Longueville, a logician and theologian, born at Cosgrove, Northamptonshire, 1820; died in London, 1871. He was educated at Merchant Taylors' School, London, and at St. John's College, Oxford, where he took his degree with double first-class honors in 1843. He became professor of moral and metaphysical philosophy at Oxford in 1859; professor of ecclesiastical history in 1867, and Dean of St. Paul's, London, 1868. Among his publications are *The Philosophy of Kant* (1856), *The Limits of Religious Thought*,

being the Bampton Lectures for 1858; *Metaphysics, or the Philosophy of Consciousness* (1860), *The Philosophy of the Conditioned* (1866), etc. A volume of *Letters, Lectures and Reviews* appeared in 1873.

Mansfeld (mans'felt), PETER ERNST, COUNT VON, Austrian general and statesman, born in 1517; died in 1604. He became governor of the Low Countries after the death of the Duke of Parma.—His natural son, ERNST (1585-1626), one of the best generals of the age, being disappointed in regard to the possession of his father's lands, joined the Protestant princes and became the bitter enemy of Austria, and a prominent leader in the Thirty Years' war. He was defeated by Wallenstein at Dessau in 1626, and died shortly afterwards.

Mansfield (mans'fēld), a town of England, Nottinghamshire, 14 miles north by west of Nottingham, in a deep valley, surrounded by vestiges of Sherwood Forest. There are cotton mills, manufactures of silk and cotton hosiery, lace thread mills, etc. Pop. (1911) 36,897.

Mansfield, a village in Mansfield township (town), Massachusetts, 24 miles S. by W. of Boston. It has manufacturers of cutlery, jewelry, straw goods, etc. Pop. of town 5183.

Mansfield, a city of Ohio, capital of Richland Co., 54 miles S. of Sandusky. It has manufactures of farming implements, stoves, machinery, brass goods, watch cases, chains, rubber goods, etc. It is the seat of the Ohio State Reformatory. Pop. 20,768.

Mansfield, RICHARD, actor, was born at Heligoland in 1857; died in 1907. He studied art in England, but adopted the theatrical profession, his career being mainly in the United States, where he was very popular, his range of characters extending from the *Mikado* to *Richard III.*

Mansfield, WILLIAM MURRAY, EARL OF, the fourth son of David, Lord Stormont, was born at Scone, in Scotland in 1705; died in 1793. Educated at Westminster School and at Oxford, he entered Lincoln's Inn and was called to the bar in 1731. In 1742 he was appointed solicitor-general, and obtained a seat in Parliament about the same time. In 1754 he was attorney-general, and in 1756 he was appointed chief-justice of the King's Bench, and made Baron Mansfield. In 1776 he was advanced to the dignity of earl. He frequently refused high office, notably that of chancellor. On the trial of Woodfall for publishing Junius' Letters, and on some other occasions, he showed himself the zealous supporter of the government, and gave offense to the popular party. During the riots of 1780 his house in London was burned down by the mob. In 1788 he resigned his office of chief-justice; and the remainder of his life was spent in retirement. He was a great lawyer, not merely in a technical sense, but as one who could direct the practice of the courts towards broad principles of jurisprudence.

Manslaughter. See *Homicide.*

Mansura (mân-sö'râ), a town of Lower Egypt, on the Damietta branch of the Nile, 34 miles S. W. of Damietta. It is the chief depot of the breadstuffs, cotton, indigo, hemp and flax which this part of the Delta produces; has linen and cotton manufactories, etc. Pop. 40,279.

Mant, RICHARD, born at Southampton, England, where his father held a living in the church, 1776; began his ecclesiastical career as vicar of Coggeshall, in Essex, in 1810. In 1820 he became bishop of Killaloe; in 1823 bishop of Down and Connor; and in 1842 was translated to the see of Dromore. He died in 1848. The works of Dr. Mant consist of a vast number of sermons and tracts, but his celebrity rests on an edition of the Bible, which he prepared in conjunction with Dr. D'Oyley.

Mantchoos. See *Manchuria.*

Mantegna (mân-ten'yâ), ANDREA, an early Italian painter, born at Padua in 1431; died at Mantua in 1506. He was a pupil of Squarcione, who adopted him as a son, but this affectionate relation did not continue. About 1459 he went to Verona, where he painted a magnificent altarpiece, in the church of St. Zeno. About 1466 he removed to Mantua, and the rest of his life was passed there, with the exception of two years at Rome. At Mantua, where he was patronized by the Marquis Gonzaga, he opened a school, and painted, among his most important works, the *Triumph of Julius Cæsar*, now at Hampton Court. One of the latest and best of this artist's works is the *Madonna della Vittoria*, now in the Louvre at Paris. There are others of his works in the Louvre, in particular *Wisdom Vanquishing Vice*, and a mythological work, *Parnassus.* Mantegna excelled in perspective, which was then a rare merit; he also excelled in engraving, and introduced the art of engraving on copper into Upper Italy. His two sons, Francesco and Carlo, were also painters.

Mantelet (man'te-let), or MANTLET, a musket-proof shield of iron or some other material, used at sieges for embrasures as a protection to gunners, and also for protecting markers at rifle-shooting target ranges.

Mantell (man'tel), GIDEON ALGERNON, geologist and palæontologist, born at Lewes, in Sussex in 1790; died in London in 1852. He practiced medicine in his native town, and later in London. Through his investigations the fossilized skeletons of those gigantic reptiles the Iguanodon and Hylæosaurus were discovered. He was a poular lecturer on geology, and published *The Fossils of the South Downs* (1822), *Illustrations of the Geology of Sussex* (1822), *Wonders of Geology* (1838), and *Medals of Creation* (1844).

Mantes (mänt), a town in France, department of Seine-et-Oise, on the Seine; 36 miles W. N. W. of Paris. It contains a fine Gothic church. Pop. 8113.

Manteuffel (mån'toi-fl), EDWIN, BARON VON, a German field-marshal, born in 1809; died in 1885. He entered the army in 1827 and advanced rapidly, becoming lieutenant-general of cavalry in 1861. He took part in the Danish war of 1864, and next year was appointed governor of Schleswig. During the war between Prussia and Austria he commanded the army of the Main and fought at Hemstadt, Vettingen, Rossbrunn and Würzburg. He played a distinguished part in the Franco-German war, especially in several actions around Metz, at Amiens, and in driving Bourbaki's army across the frontier into Switzerland. From June, 1871, to July, 1873, he commanded the army of occupation in France, and was made field-marshal. In 1879 he was appointed governor-general of Alsace-Lorraine.

Mantinea (män-te-nē'ä; Greek, *Mantineia*), an ancient city of Greece, in Arcadia, on the frontier of Argolis. It was the scene of the victory and death of Epaminondas, B.C. 362; and other famous battles.

Mantis (man'tis), a genus of orthopterous insects, remarkable for their grotesque forms. They frequent trees and plants, and the forms and colors of their bodies and wings are so like the leaves and twigs which surround them as to give them remarkable power to elude observation. (See *Mimicry*.) The *M. religiōsa*, or praying-mantis, has received its name from the peculiar position of the anterior pair of legs, resembling that of a person's hands at prayer. In their habits they are very voracious, killing insects and cutting them to pieces. They are natives chiefly of tropical regions, but are also found in France, Spain and the warmer parts of Europe. They are very

Praying-mantis (*Mantis religiōsa*).

pugnacious, and are kept by the Chinese for the purpose of watching them fight.

Mantis-crab, a name given to crustacea of the genus *Squilla*, from the second pair of jaw-feet being very large, and formed very like the fore-legs of insects of the genus *Mantis*.

Mantle (man'tl), a kind of cloak or loose garment to be worn over other garments. In heraldry the name is given to the cloak or mantle which is often represented behind the escutcheon. In zoology the mantle is the soft skin or integument of molluscous animals, otherwise known as the *pallium*. This structure secretes the shell when present, and where the shell is absent the mantle forms an investing sac or integument in which the viscera and other organs are contained and protected.

Mantlet. See *Mantelet*.

Mantua (man'tū-a; Italian, *Mantŏva*), a strongly fortified town of Northern Italy, one of four forming the *Quadrilateral*, capital of the province of the same name, 80 miles E. S. E. of Milan, on an almost insular site on the Mincio, which here divides into several arms, and afterwards spreads out into a marshy lake. The streets are regular and wide, and the public and private buildings have an ancient and substantial look. The most remarkable edifices are the cathedral, not very capacious, but after an elegant design by Giulio Romano; several churches; the ancient ducal palace of the Gonzagas, partly used as barracks; the Academy of Science and the Fine Arts; the Lyceum, containing a library and museum; the arsenal, and two theaters, one called the Teatro Virgiliano, employed for open-air performances in summer. The manufactures are limited. The trade is chiefly in the hands of the Jews, who live in a separate quarter called the Ghetto. Mantua is a very ancient city, having been founded, it is said, by the Etruscans before the building of Rome. The Gonzagas governed it for about three centuries with great ability, and distinguished themselves by the splendor of their court and their pat-

ronage of literature and art. Virgil was born at the adjoining village of Andes, supposed to be the modern Pietole. Pop. 31,783.—The province, which is intersected by the Po, Mincio, and other streams, produces rice, wheat, silk, wine, etc.; area, 961 sq. miles; pop. 311,942.

Manu (ma'nö), an early Sanskrit writer, author of a book of laws, civil and religious, called the *Institutes of Manu*, still extant and holding an important place in Hindu literature.

Manual Alphabet. See *Deaf and Dumb.*

Manual Training, the education of the hands in the practical use of tools and art implements, which is becoming a part of the ordinary school culture. Before 1876 education in this direction was not attempted in the schools, except to some minor extent in Russia and Finland. It was the Russian exhibit in this field at the Centennial Exposition of 1876 that turned the attention of American educators toward this hopeful method, and manual training work was begun in 1877 at the Massachusetts Institute of Technology and at Washington University, St. Louis. The first manual training public school was opened in 1880 at St. Louis, and was so successful that similar schools were soon established in Chicago, Philadelphia, Baltimore and Toledo. Since 1885 manual training has become part of the course of study in all agricultural and mechanical colleges, and high schools of this character have been opened in large cities in general. These are not trade schools, founded for the purpose of teaching special trades, but were designed to give instruction in general manual dexterity. But they have led to the opening of special trade schools in some cities, where particular trades can be learned. Manual training has recently been added to the work of the lower schools in some cities.

Manuel II (ma'nö-el), King of Portugal, born in 1889, second son of Carlos I, succeeded to the throne on the assassination of his father, Carlos I, February 1, 1908, his elder brother, the crown prince, being assassinated at the same time. His reign failed to give satisfaction to the people, the long-continued corruption in administration and the state finances continuing, while profligacy and incapacity marked the character of the youthful king. In consequence a revolution broke out, October 4, 1910, which was quickly successful, the army and navy joining the insurgents. King Manuel fled to Gibraltar, a republic was proclaimed, and an edict was issued forbidding the return of the king or any member of the Braganza royal family to Portugal.

Manures (ma-nūrz'), vegetable, animal and mineral matters introduced into the soil to accelerate vegetation and increase the production of crops; substances used to improve the natural soil, or to restore to it the fertility which is diminished by the crops annually carried away. Animal substances employed as manures comprehend the putrefying carcasses of animals, ground bones, blood, the excrements of animals, as the dung of horses, cattle, sheep, poultry, etc.; urine, guano (the decomposed excrement of aquatic birds); the scrapings of leather, horn and the refuse of the shambles; the hair or wool of animals. Liquid manure, consisting of town sewage, the drainings of dung-heaps, stables and cow-houses, is largely employed in many districts. Almost every kind of vegetable substance, in one state or another, is used as manure. The principal mineral substances employed as manures are lime, chalk, sand, clay, marl; sulphates of potash, soda, ammonia and magnesia; nitrates of potash and soda; and phosphates of lime. It is from containing one or other of these substances that apatite, basic slag, cubic niter, kainite, etc., are so valuable. Manures are usually distributed over the surface of the land and then ploughed or harrowed into the soil; or they may be applied in drills when the object is to give direct benefit to the young plant. The kind of manure required for each crop depends on the nature of the crop, the quality and composition of the soil, and many other conditions. Modern researches upon plant nutrition, and the chemistry of agriculture in general, have shown us that the food of plants may be classed under the two headings of *air food* and *mineral food.* Air food consists of ammonia, water and carbon dioxide; mineral food, of those substances which remain as ash when the plant is ignited. The former class of food is supplied to the plant partly from the atmosphere and partly from the soil, the latter from the soil entirely. In the production of food by natural processes of plant growth a certain amount of air food and also of mineral food is abstracted from the soil, those amounts varying for different species of plants; if this food be returned to the soil, then a further growth of plants may be expected; if, however, seed is sown in the partially impoverished soil, there must be a decrease in the amount of crop obtained from that soil. As the plants serve to nourish animals, it fol-

lows that the substances which have been withdrawn from the soil by the plants may be returned to it in the shape partly of animal excreta, and partly of ground bones, etc. Different plants require different kinds of food; if, therefore, the kind of crop grown on the same land be varied from year to year, and if the soil be tilled so as to unlock its natural supplies of mineral food, it will be found that the average yield of crops may be maintained simply by the restitution to the land of that amount of food which has been removed from it by the plants. In this restitution it must be borne in mind that it is not only mineral but also air food which is to be restored. Plants undoubtedly draw large supplies of nitrogen and carbon from the atmosphere, but it has been abundantly proved that unless this supply is augmented by artificial sources the plants soon begin to fall off and the yield of crop very sensibly to diminish. The theory of manuring consists, then, in maintaining in the soil such an amount of plant food, both mineral and organic, as shall enable us to reap the largest possible amount of crops from that soil.

Manuscripts (m a n ′ ū-skriptz; Lat. *manu scriptus*, written by the hand) are literally writings of any kind, whether on paper or any other material, in contradistinction to printed matter. Previous to the introduction of printing all literature was contained in manuscripts, and the deciphering and proper use of these form an important part in the science of palæography. All the existing ancient manuscripts are written on parchment or on paper. The paper is sometimes Egyptian (prepared from the real papyrus shrub), sometimes cotton or silk paper (*charta bombycina*). The most common ink is the black, which is very old. Red ink of a dazzling beauty is also found in ancient times in manuscripts. With it were written the initial letters, the first lines, and the titles, which were thence called *rubrics*. Blue, green and yellow inks were more rarely used. On rare occasions gold and silver were the mediums, though from their cost they are oftenest confined to initial letters. With respect to external form, manuscripts are divided into rolls (*volumina*), and into stitched books or volumes (properly *codices*). Among the ancients the writers of manuscripts were mainly freedmen or slaves (*scribæ librarii*). At a later period the monks were largely engaged in the production of manuscripts. In all the principal monasteries was a *scriptorium*, in which the *scriptor* or scribe could pursue his work in quiet, generally assisted by a *dictator*, who read aloud the text to be copied; the manuscript was then revised by a *corrector*, and afterwards handed to the *miniator*, who added the ornamental capitals and artistic designs. The most ancient manuscripts still preserved are those written on papyrus which have been found in Egyptian tombs. Several of these are of date considerably before the Christian era: notably fragments of the *Iliad* and a papyrus containing the orations of Lycophron and Euxenippus, 11 feet in length and containing 49 columns of writing. Next to them in point of age are the Latin manuscripts found at Herculaneum. Then there are the manuscripts of the imperial era of Rome, among which are the Vatican Terence and Septuagint, and the Alexandrine codex of the British Museum. Numerous manuscripts of the Old and New Testaments of the second and third centuries exist; and among those of profane authors may be noted that of Virgil (fourth century), in the Laurentian Library at Florence; a Livy (fifth century), in the Imperial Library of Vienna; the Jewish Antiquities of Josephus, in the Ambrosian Library, Milan, etc. It was a common custom in the middle ages to obliterate and erase writings on parchment, for the purpose of writing on the materials anew, manuscripts thus treated being called *palimpsests*.

The art of illuminating manuscripts dates from the remotest antiquity. The Egyptian papyri were ornamented with vignettes or miniatures attached to the chapters, either designed in black outlines or painted in primary colors in distemper. The oldest ornamented Greek and Roman manuscripts that have survived are the Dioscorides of Vienna and the Virgil of the Vatican, both of the fourth century, and having vignettes or pictures in a Byzantine style of art. From the eighth to the eleventh century the initial letters in use were composed of figures of men, quadrupeds, fishes, birds, etc. The initials of the twelfth century are made up of masses of conventional foliage interspersed with the animal figures of the preceding centuries. Continuous borders, with vignettes, tail-pieces, etc., were also prevalent in later times, and some manuscripts are ornamented with very artistic designs. In the sixteenth century the art of illumination became extinct. Some attempts have been made to revive it by adorning paper, parchment and vellum with designs in colors or metals.

Manutius (ma-nō′she-us), Aldus, or Aldo Manuzio, an Italian printer, born about 1447; died in 1515. In

1488 he established himself as a printer at Venice, but the first work which he finished was not published till 1494. In the course of the ensuing twenty years he printed the works of the most ancient Latin and Greek authors extant, as well as many productions of his contemporaries, and some treatises of his own composition. He was the inventor of the italic or cursive character, hence called *Aldine*. His business was continued by his son PAOLO MANUZIO, born in 1512; died in 1574; a man distinguished as a classical scholar no less than as a printer; and by his grandson ALDO, born in 1547; died in 1597. See *Aldine Editions*.

Manyplies (men'i-plīz), the popular name given to the *psalterium* or *omasus*, the third chamber or cavity of the ruminant stomach.

Manytch. See *Maniteh*.

Manzanillo (m å n-thå-nēl'yō). (1) A seaport on the south coast of Cuba, with a good roadstead. Pop. 15,819. (2) A seaport of Mexico, state of Colima, on the Pacific. Pop. 4000.

Manzoni (m a n-zō'nē), ALESSANDRO, an Italian poet and novelist, was born in 1784; died in 1873. He was the son of Count Pietro Manzoni and of the Marchioness Giulia Beccaria, daughter of the Marquis Cesare Beccaria, author of the well-known treatise on *Crimes and Their Punishment*. After his father's death in 1805 he lived for some time in Paris with his mother, and in 1808 he married the daughter of a Genoese banker, under whose influence he settled down into the fervent Catholicism which colored all the rest of his life. His chief works are the *Inni Sacri*, a series of sacred lyrics; *Il Cinque Maggio*, a powerful ode on the death of Napoleon; the tragedies *Il Conte di Carmagnola*, and *Adelchi;* and his great novel *I Promessi Sposi* ('The Betrothed').

Maoris (må'o-riz or m o u' r i s), the name given to the natives of New Zealand. See *New Zealand*.

Map, a projection on a plane surface of the whole or a part of the earth's surface, showing its main features in more or less detail. The earth being a spheroid, its surface cannot be made to coincide rigorously with a plane; and it therefore becomes necessary to have recourse to a *projection*, that is, a plan on a plane surface, which indicates with sufficient correctness the relative positions, dimensions, etc., of the different parts of the spherical surface. There are five principal projections, the orthographic, the stereographic, the globular, the conical and the cylindrical or Mercator's, distinguished from each other by the different positions of the point of projection, or that in which the eye is supposed to be placed. The last named gives a very erroneous idea of the relative size of the different portions of the earth's surface, especially towards the poles, but is very useful to mariners, in enabling them to lay off a course that can be steered by compass in straight lines. (See *Mercator's Projection.*) A nautical map is usually called a *chart* (which see). A map of the ea th, or a portion of the earth, usually exhibits merely the positions of countries, mountains, rivers, lakes, cities, etc., relatively to one another, and by means of lines of latitude and longitude relatively to every other point on the earth's surface. But a map may be so colored or shaded as to give a variety of information: for example, to indicate the geological structure, the amount of rainfall, or o er meteorological phenomena, the results of statistical inquiry, the languages spoken, etc. Hence we have geological, meteorological, linguistic, and other kinds of maps. We find traces of maps among the Egyptians in the times of Sesostris (B.C. 1618), who caused his hereditary dominions and his conquests to be represented on tablets for his people. The first attempt to draw a map of the whole known world was made by Anaximander of Miletus (B.C. 611-547). Ptolemy (flourished 126-161 A.D.) drew maps according to the stereographic projection. Agathodæmon, an artist of Alexandria, drew twenty-six maps for the geography of Ptolemy. Roman map-making is represented by the Peutinger table made about 230 A.D., which gives itineraries of the whole world known to the Romans from Britain to India. No attempt at scientific mapping was made during the middle ages, and modern map-making was identified in its early days with the names of Abraham Ortelius Gerhard Mercator (born in 1512; died in 1594), William and John Blaeu (who produced 616 maps), Sanson, Schenk, Visschen, De Witt, Hondius. It is only, however, during the present period that mathematically accurate surveys and delineations of the earth's surface have been ma e.

Map, or MAPES, WALTER, a scholar and poet of the twelfth century, a native of the Welsh Marches, is supposed to have been born about 1150; and to have died about 1210. He studied at the University of Paris, and made an important figure in the court of Henry II. He became Archdeacon of Oxford in 1199; contributed to the Arthurian cycle

of romance the romances of the *Quête du Saint Graal, Lancelot du Lac,* and the *Mort Artus;* was the author of a curious book, *De Nugis Curialium,* a note-book of the events of the day and of court gossip; and to him is attributed a collection of rhymed Latin verse, in which the abuses of the church are hit off with vigor and humor. Among the most remarkable of these are the satirical *Apocalypse* and the *Confession of Bishop Golias.*

Maple (mā′pl), a name for trees of the genus *Acer,* nat. order Aceraceæ or Sapindaceæ, peculiar to the northern and temperate parts of the globe.

Sugar Maple (*Acer saccharinum*).

About fifty species are known, distributed through North America, Europe, and different parts of Asia. They include small or large trees, with a sweetish, rarely milky, sap, opposite deciduous, simple, usually lobed leaves, and axillary and terminal racemes or corymbs of small greenish flowers. The characteristic form of the fruit is shown in the figure. Two species are common in Europe: the great maple, often miscalled sycamore (*A. Pseudo-platănus*), and the common maple (*A. campestre*). The wood of the former is valuable for various purposes, as for carving, turnery, musical instruments, wooden dishes, etc. Another well-known species is the Norway maple (*A. platanoides*), often planted as an ornamental tree. The wood of several American species is also applied to various uses. The sugar or rock maple (*A. saccharinum*) is the most important species; this yields maple sugar, which in many parts of the United States is an important article of manufacture. A tree of ordinary size will yield from 15 to 30 gallons of sap yearly, from which are made from 2 to 4 lbs. of sugar. The knotted parts of the sugar-maple furnish the pretty *bird's-eye maple* of cabinet-makers. Some other American species are the white maple (*A. dasycarpum*); the red or swamp maple (*A. rubrun*); the striped maple or moose wood (*A. Pennsylvanicum*); the mountain ma- *brum*); the striped maple or moose wood *circinatum*); and the large-leaved maple (*A. macrophyllum*).

Maqui (mak′wē), an evergreen or sub-evergreen shrub found in Chile, from the juice of whose fruit the Chilians make a kind of wine. It is the best-known species of the genus *Aristotelia* (*A. Maqui*), and is referred to the nat. order Tiliaceæ (linden). It is cultivated as an ornamental shrub in England, and its fruit ripens.

Marabou-stork (mar′a-bö), the name given to two species of storks, the delicate white feathers beneath the wing and tail of which form the beautiful and ornamental marabou feathers. One species is a native of West Africa (*Leptoptilus marabou*), another is common in India, where it is generally called the *adjutant* (which see).

Marabouts (mar′a-bötz), Marabuts, among the Berbers of Northern Africa a sort of saints or sorcerers, who are held in high estimation, and who exercise in some villages a despotic authority. They distribute amulets, affect to work miracles, and are thought to exercise the gift of prophecy.—The name Marabouts is also used as equivalent to Almoravides (which see).

Maracaibo (mȧ-rȧ-kī′bō), a seaport of Venezuela, on the western side of the strait which unites the lake and gulf of the same name, about 20 miles from the sea. There is a good trade in coffee, cacao, leather, hides, medicinal plants, etc. Pop. about 50,000.—The Lake of Maracaibo is about 98 miles long and 80 broad at the widest part. It communicates, by a strait about 18 miles long and 3 broad, with the gulf of the same name, which is an inlet of the Caribbean Sea, 90 miles in length, and about 60 miles in width at the entrance.

Maragha (mä′rä-gȧ), an ancient walled town in Azerbijan, Persia, 10 miles from Lake Urumiah; famous for a fine marble which in thin plates is nearly transparent. Pop. 16,000.

Marajo (mȧ-rȧ-zhō′), an island of Brazil, formed by the estuaries of the Amazon and Pará, and belonging to the province of Pará; length, 180 miles; breadth, 125; pop. (chiefly Indians and Mestizoes), 20,000.

Maranham (mȧ-rȧ-nyam′), or Maranhão (mȧ-rȧ-nyoun̨),

a province of Brazil, on the northeast coast; area, 177,566 sq. miles. A considerable part of the surface is occupied by forests, yielding excellent timber and dyewoods. The soil is very fertile, producing maize, cotton, sugar, rice, cocoa, pimento, ginger, etc. Pop. 499,308. The capital, Maranhão (San Luiz de M.), is a prosperous, well-built city on an island of the same name, carrying on a good trade in cotton, caoutchouc, hides, etc. Pop. about 40,000.

Marañon. See *Amazon.*

Maranta, a genus of plants, nat. order Marantaceæ. See *Arrow-root.*

Marantaceæ (mar-an-tā'se-ē), an order of endogenous plants, growing in tropical countries; called also *Cannaceæ.* They are perennial herbs with fibrous roots or fleshy creeping rhizomes, alternate simple leaves with sheathing footstalks, and irregular racemose or panicled flowers. The type genus is *Maranta,* which is more commonly called arrow-root.

Maraschino (ma-ras-kē'nō), a fine liquor distilled from a small black wild variety of cherry. The best-known kinds are the maraschino de Zara, from Zara in Dalmatia, and that from Corsica. An inferior kind is made in Germany.

Marasmus (ma-ras'mus), a wasting of the flesh without fever or apparent disease; often, however, dependent on disease of the mesenteric glands, or some obstruction in the course of the chyle.

Marat (mȧ-rä), Jean Paul, one of the most infamous leaders of the French revolution, born near Neufchâtel in 1744. He studied medicine at Paris, and previous to 1789 had spent many years in travel, visiting London, Edinburgh, Dublin, Amsterdam, etc., supporting himself by giving lessons in the modern languages, and at intervals publishing works on medical and scientific subjects. The first breath of the revolution, however, brought him to the front, and when Danton instituted the club of the Cordeliers, Marat became the editor of the *Publiciste Parisien,* better known under its later title *L'Ami du Peuple,* which was again changed to the *Journal de la République Française,* a journal which was the organ of that society, and soon became the oracle of the mob. It early advocated the most extreme measures, and the tone became more furious as Marat was inflamed by the prosecutions of the authorities. His paper was issued from various places of concealment until August 10, 1792, after which he took his seat at the commune, and played a leading part in the assassinations of September (1792). He was a member of the terrible committee of public safety,

Jean Paul Marat.

and of the convention where General Dumouriez and the Girondists, who endeavored at first to prevent his taking his seat, were the special objects of his attack. The establishment of the revolutionary tribunal, and of the committee for arresting the suspected, was adopted on his motions. On the approach of May 31, as president of the Jacobin Club he signed an address instigating the people to an insurrection, and to massacre all traitors. For this Marat was delivered over to the revolutionary tribunal, which acquitted him; and the people received him in triumph and covered him with wreaths. He was assassinated shortly after by Charlotte Corday, July 13, 1793. His remains were deposited in the Pantheon with national honors, but were subsequently removed.

Marathi (ma-rät'hē), a language of Southern India, closely allied to Sanskrit and written in the Sanskrit character. It is the vernacular of some sixteen millions of people, mostly in Hyderabad and Bombay presidency.

Marathon (mar'a-thon), a village of ancient Greece, in Attica, about 20 miles northeast of Athens. It was situated (probably on the site of the modern Vrana) on a plain which extends for about 6 miles along the seashore, with a breadth of from 1½ to 3 miles. It is famous for the overthrow of the Persians by the Athenians under Miltiades, 490 B.C., and for the Marathon races. (See following article.)

Reproduced by permission of The Philadelphia Museums.

MARBLE QUARRY

Marble is quarried by means of sawing machines, which cut the blocks and slabs out in uniform shapes. This view, taken in a great marble quarry, shows the result of the method. Each of the steps represents the depth of a cut.

Marathon Run, a form of athletic training of recent adoption in several countries, arising from the redevelopment of the ancient Greek sports. After the battle of Marathon, a runner carried the news of the victory to Athens, many miles distant. The legend is that he fell dead after telling his story. Long runs of this character have now become common in many of our cities, in competition for marks of honor.

Marattas. See *Mahrattas.*

Maratti (mȧ-rȧt'tē), CARLO, an Italian painter and engraver, born in 1625. Louis XIV. employed him to paint his celebrated picture of *Daphne.* Clement IX, whose portrait he painted, appointed him overseer of the Vatican gallery. He has been styled the last painter of the Roman school. His *Madonnas* were particularly admired. He died in 1713 at Rome, where his chief works are to be found.

Marble (mȧr'bl), the name given to certain varieties of limestone capable of receiving a brilliant polish, and which, both from their durability and the beauty of the tints of many of them, have at all periods of the world been greatly in request for purposes of art or ornament. White statuary marble is a pure carbonate of calcium. Marbles have been divided into seven varieties or classes, viz. 1, *marbles of a uniform color,* comprehending solely those which are either white or black; 2, *variegated marbles,* or those in which the spots and veins are interlaced and disposed without regularity; 3, *shell marbles,* or those which are in part made up of shells; 4, *lumachelli marbles,* or those which are apparently wholly formed of shells; 5, *cipolino marbles,* or those veined with green talc; 6, *breccia marbles,* or those which are formed of angular fragments of different marbles united by a cement of some different color; 7, *pudding-stone marbles,* or those which are formed of reunited fragments, like the breccia marbles, only with the difference of having the pebbles rounded in place of being angular. By *antique marbles* are understood those kinds made use of by the ancients, the quarries of which are now, for the most part, exhausted or unknown. These include Parian marble, Pentelic marble, Carrara marble (still largely quarried), *rosso antico, giallo antico, verde antico,* etc.

Marblehead (mȧr'bl-hed), a seaport and township of Essex County, Massachusetts, 12 miles northeast from Boston, on a rocky point projecting into Massachusetts Bay. It has a safe and deep harbor, and is a favorite watering-place. It was formerly one of the most important maritime towns of New England and is one of its oldest and quaintest places. It has boot and shoe factories and a seed-growing industry. Pop. 7338.

Marbling (mȧr'bling), in bookbinding, a process of ornamenting the edges of books by dipping them, when cut, in a trough about 2 inches deep and filled with gum-water on the surface of which colored pigments have been thrown and disposed in various forms with a quill and comb. The colors adhering to the edge of the book are set by dashing cold water over them. Marbled papers for the sides of books are made in the same manner.

Marburg (mär'börg), a town of Prussia in the province of Hesse-Nassau, capital of the district of Cassel, on the slopes of an acclivity above the Lahn, 46 miles north from Frankfurt. The principal buildings are the castle of the landgraves of Hesse, now partly used as a prison; the university (about 800 students), the first founded in Germany after the Reformation; the church of St. Elizabeth (thirteenth century), the chancery, library and town house. Pop. (1905) 20,137.

Marcasite (mar'ka-sīt), iron pyrites or bisulphide of iron. It is of a paler color than ordinary pyrites, being nearly of the color of tin, and its luster is more strongly metallic.

Marcelli'nus. See *Ammianus Marcellinus.*

Marcellus (mar-sel'us), MARCUS CLAUDIUS, a Roman general, five times consul (222, 215, 214, 210 and 208 B.C.); the first Roman who successfully encountered Hannibal in the second Punic war; and the conqueror of Syracuse (212 B.C.). He was killed in a skirmish with the Carthaginians in 208 B.C.

March, the measured and uniform tread of a body of men, as soldiers. It may be in slow, quick, or double time, the standard for the first or parade march being 75 paces in a minute, for the second 110, for the third 150.

March, a town of England, in the county and 29 miles northwest of Cambridge, on both sides of the Old Nene. Its two principal streets cross at right angles, and are each nearly 2 miles long. Pop. (1911) 8403.

March, originally the first month of the Roman year. Till the adoption of the new style in Britain (1752), the 25th of March was the first

day of the legal year; hence January, February, and the first twenty-four days of March have frequently two years indicated, as January 1, 170½, or 1701-02.

March, Francis Andrew, philologist, born at Milbury, Massachusetts, in 1825. He became a lawyer in 1850 and professor of comparative philology at Lafayette College in 1858. He was made president of the Spelling Reform Association on its organization in 1876. His ability in philological science is very high, and he has written *Comparative Grammar of the Anglo-Saxon Language, Philological Study of the English Language,* etc.

Marchena (mår-chā′nå), a town of Spain, in Andalusia, province of Seville, and 30 miles east by south from the city of that name. There are sulphur springs in its vicinity. Pop. 12,468.

Marches (mår′chez), the frontiers or boundaries of a territory. The term is most familiar as applied to the boundaries between England and Wales, and England and Scotland. The latter were divided into three portions, the western, the eastern and the middle marches, each of which had courts peculiar to itself, and a kind of president or governor, who was called warden of the marches. What is known as *riding the marches* is a practice still observed occasionally in some of the burghs of Scotland, the original object being to preserve in the memory of the inhabitants the limits of their property. In observing this practice the magistrates and chief men of the town, mounted on horseback, ride in procession along the boundaries of the town property, and perform various ceremonies.

Marches, The, a territory of Italy, comprising a region lying between the Apennines and the Adriatic, and divided into four provinces—Urbino and Pesaro, Ancona, Macerata and Ascoli.

Marcion (mar′si-on), the founder of an ascetic Gnostic sect, called after him Marcionites, was born at Sinope about the beginning of the second century of our era, his father being bishop of Sinope. He went to Rome about 140 A.D. and founded a system which assumed the existence of three original principles—the supreme and invisible, whom Marcion called the Good; the visible God, the Creator; and the Devil, or perhaps matter, the source of evil. The Creator, the God of the Old Testament, was the author of suffering. Jesus was not the Messiah promised by this being, but the son of the unseen God, who took the form, but not the substance of man. Marcion denied the resurrection of the body; he condemned marriage, thinking it wrong to increase a race born in subjection to the harsh rule of the Creator. His sect lasted for several centuries.

Marcomanni (mår-ko-man′i), Markomanni, the name of an ancient German tribe or tribal league, apparently originally marchmen or borderers on the Rhenish frontier. They subsequently migrated east, displaced the Boii from their territory (the modern Bohemia), and under their king Maroboduus formed a great Marcomannic confederacy to hinder the extension of the Roman power beyond Pannonia. Being defeated, however, by a rival confederacy composed of the Cherusci and their allies, they entered into more or less friendly relations with Rome until the time of Domitian, whom they defeated. Trajan and Hadrian kept them in check, but in 166 A.D. they invaded Pannonia, and commenced the long *Marcomannic war.* Aurelius drove them back, and Commodus purchased peace from them, but they continued to make inroads into Rhætia and Noricum, and in the reign of Aurelian penetrated Italy as far as Ancona, and even threatened Rome itself. After that, however, they practically pass out of history.

Marconi (mår-chō′nē), Guglielmo (William), an Italian physicist, born near Bologna in 1875. He was the first to succeed in devising a practical system of wireless telegraphy, beginning his researches at the age of 15. His apparatus was tested in England in 1897, when messages were sent over a distance of 15 kilometers. He used it in reporting election returns in 1900, and rapidly increased the distance covered, until in 1902 he succeeded in signaling across the Atlantic. Ocean news service by wireless was inaugurated by him in 1904, and his method developed until news items were regularly transmitted across the Atlantic, and in 1910 a message was transmitted from Ireland to Argentina. He was awarded, in 1909, one-half the Nobel prize for physics.

Marco Polo. See *Polo.*

Marcou, Jules, geologist, born at Salins, France, in 1824. He took part in the geological survey of the Jura Mountains. While in this work he made the acquaintance of Louis Agassiz, who invited him to the United States, and whom he assisted on his survey of the Lake Superior region in 1848. He

became connected with the Museum of Comparative Zoology at Cambridge in 1861 and was in the service of the government from 1875 till his death in 1898. He was the first geologist to cross the American continent; and on this trip drew a section map of the 35th parallel from the Mississippi River to the Pacific coast.

Marcus Aurelius. See *Aurelius Antoninus.*

Mardi Gras (mär'dē grȧs; 'fat Tuesday'), Shrove Tuesday, the last day before Lent. It is signalized in France by a gorgeous procession, which includes a fat ox richly caparisoned. In the United States the day is observed in New Orleans and some other southern cities with showy processions and other ceremonies.

Mardin (mär-dēn'), or MARDEEN, a town of Asiatic Turkey, Bagdad pashalic, on a limestone rock, at an elevation of 2300 feet, overlooking a large and fertile plain. (See *Jacobites.*)

Maree (mä-rē'), LOCH, a Scottish lake in the west of Ross-shire, stretching southeast to northwest for 18 miles, with an average breadth not exceeding 1½ miles.

Maremme (mar-em'mȧ), low swampy tracts of Italy, extending along the coast of Tuscany from the mouth of the Cecina to Orbitello. Formerly these regions were fruitful, healthy, and populous; but after the fifteenth century the neglect of the water courses of the district allowed the formation of marshes, and now they generate tertiary fevers, and present an aspect of dreary desolation during the summer months, when the inhabitants flee from the pestilential exhalations of the soil. In winter, on the other hand, the Maremme are inhabitable, and afford a luxuriant pasturage. The Pontine Marshes and the Campagna of Rome are similar districts.

Marengo (mȧ-ren'gō), a village in Italy, in the province of Alessandria, and so near the town of that name as to be considered one of its suburbs; celebrated for the battle of June 14, 1800, when the French under Bonaparte defeated the Austrians under Melas.

Mareotis (mar-ē-ō'tis), or MARIOUT, a lake of Lower Egypt, separated from the Mediterranean by the long narrow belt on which Alexandria stands. The main expanse is about 28 miles long by 20 broad, and lies 8 feet below the sea level. Salt is extensively made here by evaporation.

Mare's-tail Coral. See *Isis.*

Margaret (mar'ga-ret), Queen of Denmark, Norway and Sweden, called the *Northern Semiramis*, the daughter of Waldemar III, king of Denmark; born at Copenhagen in 1353, married to Hakon, king of Norway, in 1363. The death of her husband in 1380 placed Norway in her hands; that of her son Olaf in 1387 enabled her to secure the throne of Denmark, to which she had previously brought about his election; and after defeating Albert, the Swedish king, she also obtained possession of the throne of Sweden. She endeavored to place the union of the three kingdoms on a permanent basis by the celebrated Act of Union, or Treaty of Calmar (1397). She died in 1412, after having raised herself to a degree of power then unequaled in Europe from the time of Charlemagne.

Margaret, SAINT, the elder sister of Eadgar Ætheling, after the Norman Conquest took refuge with her brother at the court of Malcolm Canmore of Scotland, whom she shortly afterwards married. She is said to have introduced into Scotland the higher culture of the English court, and to have effected many reforms in the Scottish church. She died in 1093. Her daughter Matilda married Henry I.

Margaret of Anjou, daughter of René, titular king of Sicily, was born at Pont-à-Mousson, in Lorraine, in 1425, and was married in 1443 to Henry VI of England. The imbecility of the king made her practically regent, and her power being contested by the Duke of York, a claimant of the throne by an elder line, the protracted wars of the Roses commenced. At first victorious she was afterwards compelled to flee to Scotland, but raising an army in the north, she secured, by the battles of Wakefield (1460) and St. Albans (1461), the death of York and the release of the king. Her army, however, was soon afterwards annihilated at Towton (1461), and Edward (IV), the son of the late Duke of York, was declared king. She succeeded in obtaining assistance from Louis XI of France, but was once more defeated, and took refuge in France. Warwick then became embroiled with the young king, and determined to replace Henry on the throne. Edward was in turn obliged to escape to the continent, but obtaining assistance from the Duke of Burgundy, returned and defeated Warwick at Barnet (1471). Margaret, collecting her partisans, fought the battle of Tewkesbury (1471), but was totally defeated. She and her son were made prisoners, and the latter, when led into the presence of the royal victor,

was killed. Henry soon after died or was murdered in the Tower, and Margaret remained in prison four years. Louis XI ransomed her for 50,000 crowns, and in 1482 she died.

Margaret of Valois, Queen of Navarre, sister to Francis I, of France, was born at Angoulême in 1492. She was brought up at the court of Louis XII, and married the Duke of Alençon in 1509, became a widow in 1525, and in 1527 was espoused to Henry d'Albret, count of Béarn and titular king of Navarre. From this time she resided at Béarn, assisting in the development of the resources of the small kingdom, and making it a center of liberal influence. Many Protestants took refuge in her territories; and her name is closely linked with those of Rabelais, Dolet, Marot and the leading men of the period. She herself possessed no ordinary culture, being credited with a knowledge of six languages and the authorship of several works, of which the chief were *Le Miroir de l'Ame Pécheresse*, printed in 1533 and condemned by the Sorbonne for its Protestant tendencies; the *Heptaméron*, a collection of tales in imitation of the *Decamerone* of Boccaccio, and first printed in 1559; and a collection of poems published in 1547 under the title of *Marguerites de la Marguerite des Princesses*. She died in 1549, leaving one child, Jeanne d'Albret, afterwards mother of Henry IV.

Margarine (mar'ga-rin), a mixture of stearine and palmitine, obtained from beef fat, lard, etc., and formerly regarded as a single fat. The name is now applied to an imitation of butter. See *Butterine*.

Margarita (mär-ga-rē'tȧ), an island belonging to Venezuela, in the Caribbean Sea; greatest length, 37 miles; greatest breadth, about 20. Margarita was discovered by Columbus in 1498. Pop. about 40,000.

Margate (mär'gāt), a seaport, municipal borough, and watering place in England, in the county of Kent, 64 miles east by south from London, pleasantly situated at the northern extremity of the Isle of Thanet. The town, which is a favorite resort with Londoners, is in the main well laid out with fine piers and promenades. The special features of Margate are its hospitals and its hotels; the only industry of importance, as apart from the entertainment of visitors, being its sea-fishing. Pop. (1911) 27,086.

Margay (mär'gā), a Brazilian animal of the cat kind, the *Felis Margay* or *F. tigrina*. It is about the size of the domestic cat, is of a pale fawn color, with black bands on the foreparts, and leopard-like spots on the hindparts and on the long bushy tail. It has been domesticated and made very useful in rat killing.

Margrave (mär'grāv; German *markgraf*, count of the mark), originally a commander entrusted with the protection of a *mark*, or country on the frontier. The margraves acquired the rank of princes, and stood between counts and dukes in the German Empire.

Maria Louisa (ma-rē'a lou-ē'sa), second wife of Napoleon I; born in 1791; eldest daughter of the Emperor Francis I of Austria. Her marriage with Napoleon took place in 1810 after the divorce of Josephine, and in 1811 she bore him a son. After his overthrow she received in 1816 the duchies of Parma, Piacenza and Guastalla, which she governed till her death in 1847. At Napoleon's death she made a morganatic marriage with her chamberlain, Count Neipperg.

Mariana (mȧ-re-ȧ'nȧ), JUAN, a Spanish historian, born in 1537. He entered the Society of Jesuits, and for thirteen years tanght theology with distinction in Rome, Sicily and Paris, returning to the Jesuits' College at Toledo in 1574, but his sentiments were too liberal to make his position comfortable. Besides a *History of Spain*, he wrote an essay *De Rege et Regis Institutione*, which was burned at Paris as countenancing the slaying of tyrants. He died in 1623.

Mariana Isles (or MARIANNE). See *Ladrones*.

Maria Theresa (ma-rē'a tā-rā'sȧ), Queen of Hungary and Bohemia, Archduchess of Austria, and Empress of Germany, daughter of the Emperor Charles VI, was born at Vienna in 1717, and in 1736 married Francis Stephen, grand-duke of Tuscany. On the death of her father in 1740 she ascended the throne of Hungary, Bohemia, and Austria, and a little later declared her husband joint ruler. Her accession was in accordance with the Pragmatic Sanction, but her claims were at once contested. Frederick the Great made himself master of Silesia; Spain and Naples gained possession of the Austrian territory in Italy; and the French, Bavarians and Saxons marched into Bohemia, carrying all before them. Charles Albert was proclaimed Archduke of Austria, and shortly after Emperor of Germany; and the young queen fled to Presburg, where she convoked the diet

and threw herself upon the sympathy of her Hungarian subjects. The French and Bavarians were speedily driven from her hereditary states; Prussia made a secret peace with the queen, who unwillingly abandoned Silesia and Glatz to Frederick; and though by the Treaty of Aix-la-Chapelle (1748) she was also compelled to give up the duchies of Parma, Piacenza, and Guastalla to Spain, her husband was elected emperor. During the time of peace which followed Maria Theresa, with the aid of her husband and the minister Kaunitz, made great financial reforms; agriculture, manufactures and commerce flourished, the national revenue greatly increased, and the burdens were diminished. The Seven Years' war again reduced Austria to a state of great exhaustion, but on its conclusion the empress renewed her efforts to promote the prosperity of her dominions. Her son Joseph was elected king of the Romans in 1764, and on the death of her husband, in 1765, she associated the young prince with herself in the government. In 1772 she joined in the dismemberment of Poland, obtaining Galicia and Lodomeria, while in 1777 she acquired Bukowina from the Porte, and in 1779, by the Peace of Teschen, gained the Inn valley. She died in 1780. Of the sixteen children which she bore to the emperor ten survived her, one of whom was the unfortunate Marie Antoinette.

Maria-Theresiopel. See *Theresiopel.*

Maria-Zell (mȧ-rē'ȧ-tsel), a small town of Austria in the extreme north of Styria, in the midst of mountains, near the Salza. Its celebrity is due to its possession of a handsome church, with a shrine containing a small black image of the Virgin and Child, to which numerous pilgrimage processions proceed annually from different parts of the Austrian dominions. The number of annual pilgrims is said to reach the great number of 200,000.

Marie Antoinette. See *Antoinette.*

Marie de Medici (mȧ-rē dė med'i-chē), the daughter of Francis II of Tuscany, born in 1573; married in 1600 to Henry IV of France. On the assassination of Henry she became regent, but proved utterly incompetent to rule. Her partiality for unworthy favorites caused her deposition and imprisonment. She became reconciled to her son, the weak Louis XIII, through Richelieu, who had possessed himself of the highest power, but was again imprisoned at Compiègne in 1630. Thence she escaped, and after wandering through several countries died in misery at Cologne in 1642.

Marie Galante (gȧ-länt), an island in the West Indies, belonging to France, 5 leagues from Guadeloupe, of which it is a dependency. The chief productions are sugar, coffee, tobacco, indigo and cotton. Pop. about 17,000, chiefly negroes.

Marienbad (mä'ri-en-bȧt), one of the most frequented and picturesque of the Bohemian watering-places, about 24 miles from Carlsbad, with saline and purgative springs. Pop. 4588.

Marienburg (mä'ri-en-bu̇r*h*), a town in Prussia, in the government of Danzig, and 27 miles southeast of the city of that name, on the Nogat. It was once the seat of the knights of the Teutonic order, and contains the fine castle of the grand masters. Pop. (1905) 13,095.

Marienwerder (mä'ri-en-ver-dėr), a town of West Prussia, on a height near the confluence of the Vistula and Nogat, 43 miles S. S. E. of Danzig. It has an ancient and handsome cathedral and an old castle, partly used as a courthouse, partly as a prison. Pop. (1905) 10,258.

Mariet'ta, a city of Ohio, capital of Washington Co., and the oldest town in the State. It is on the Ohio and the mouth of the Muskingum River, 80 miles S. E. of Zanesville. Here is Marietta College, founded in 1835. Petroleum wells in its vicinity furnish an extensive trade, and it has large flour mills, oil-well supply factory and chair company, with numerous other industries. Pop. 12,923.

Marietta, a city, capital of Cobb Co., Georgia, 20 miles N. W. of Atlanta. It is on an elevated site and is a place of resort. It has various manufactures. Pop. 5949.

Mariette (mȧ-re-et), Auguste Edward, a distinguished French Egyptologist, born in 1811. He was attached to the Egyptian museum in Paris, and after successful scientific expeditions to Egypt he was appointed by the viceroy inspector-general of monuments and curator of the museum at Boulak, with the title of Bey, and latterly of Pasha. He died in 1881. His works were very numerous.

Marignano (mȧ-rē-nyä'nō), or Melegnano (mel-e-nyä'nō), a town of North Italy, 10 miles southeast of Milan; famous for the defeat of the Imperialists by Francis I. in 1515, and for a victory of the French and Italians over the Austrians in 1859. Pop. 6666.

Marigold (mar′i-gōld), a name of several composite plants. The common marigold (*Calendŭla officinālis*) is a native of France and of the more southern parts of Europe. It is an annual, from 1 to 2 feet high, with large deep-yellow flowers. It is as prolific as any weed, and was formerly used in broths and soups, partly to give color, and partly as an aromatic seasoning. It had also many medicinal virtues assigned to it, such as emmenagogue, diaphoretic, tonic, antispasmodic and alterative. Locally it is used as an embrocation for bruises. It is now but little used, as it has been replaced by other drugs. A number of species of this genus are indigenous to the Cape of Good Hope. The so-called African marigold and French marigold, common in flower borders, are both Mexican species, and have brilliant flowers. They belong to the genus *Tagētes.* The corn-marigold is *Chrysanthĕmum segĕtum;* the fig-marigold is a *Mesembryanthĕmum;* the marsh-marigold is *Caltha palustris.*

Marine Law. See *Commercial Law, International Law.*

Mariner's Compass. See *Compass.*

Marines (ma-rēnz′), a military force drilled as infantry, whose especial duty is to serve on board ships of war when on commission, and also on shore under certain circumstances. They are trained to seamen's duties, but do not go aloft, being mainly employed in sentry duty, etc. The force was first embodied by an order in council in 1664 as a nursery for seamen to man the fleet. The United States and Britain are the only nations which employ marines in this manner.

Marinette, a city, capital of county of same name, on Green Bay, Wisconsin. Bridges here cross the Menominee River to Menominee, Michigan. It has numerous saw mills, the lumber interests being very large; also large agricultural implement works. There are also flour, paper and pulp mills, box factories, and a planing mill, etc. Pop. 14,610.

Marino (ma-rē′nō), San, a town and small independent republic in Italy. The territory consists of a craggy tract, with an area of about 22 square miles, on the borders of the provinces of Forli and Urbino, near the Adriatic coast. It is the last surviving representative of the Italian republics. At the head of the government are two 'captains regent' elected for six months. There is a militia of 950 men. The town San Marino occupies the crest of a rocky hill 2200 feet in height, and is accessible only by the road from Rimini. The principal inhabitants, however, reside in the hamlet of Il Borgo, at its foot. Pop. 7307.

Mario (mȧ-re-ō′), Giuseppe, Marquis di Candia, a famous tenor, born at Turin in 1808. In 1830 he became an officer in the Sardinian army, but to escape the punishment of some youthful freak threw up his commission and fled to Paris. There in 1838, under the assumed name of Mario, he accepted an appointment as first tenor of the opera, and a year later was secured for the Théâtre Italien. For many seasons he divided his time between London, Paris and St. Petersburg. He died in 1883.

Mariolatry (mar-i-ol′a-tri), a term applied by Protestants with a sense of opprobrium to the worship of the Virgin Mary.

Marion (mar′i-on), Francis, a Revolutionary soldier, was born in Winyaw, South Carolina, in 1732. His career as a partisan soldier was most brilliant, and he ranks among the most famous of American soldiers, having made himself a hero of romance by the character of his exploits. He died in 1795.

Marion, a city, capital of Williamson Co., Illinois, 18 miles E. of Carbondale. It is a shipping point for farm products. Pop. 7093.

Marion, a city of Indiana, capital of Grant Co., on the Mississinewa River, 40 miles S. E. of Logansport. It has a National Soldiers' Home, and is in an important natural gas field, and a farming and fruit-raising district. Its industries include glass and iron works, rolling mill, etc. Pop. 19,359.

Marion, a city of Ohio, capital of Marion Co., 35 miles W. S. W. of Mansfield, on the Pennsylvania, Erie, and other railroads. In the vicinity are notable lime and stone industries, and it has large manufactures, including flour mills, steam-shovel works, malleable iron works, and lumber mills, with numerous other smaller industries. Pop. 18,232.

Mariotte (mȧ-re-ot), Edme, a French mathematician and natural philosopher, born in Burgundy in 1620, served as priest at St. Martin-sous-Beaune, became member of the Academy of Sciences in 1666, and died in 1684. He followed closely in the steps of Galileo and Torricelli, and made many important discoveries in hydrostatics and hydraulics. The law according to which the density of the atmosphere is regulated was discovered by him and Boyle independently. See *Boyle's Law.*

Mariposa (mar-i-pō′sä), a large and beautiful fish found in the open Atlantic and Pacific Oceans.

Mariposa (*Lampris luna*).

Mariput (mar′i-put), the zoril, an animal of the genus *Viverra*, the *V. zorilla*, a species of civet.

Maritime Law. See *Commercial Law.*

Maritza (mä-rē′tsa; the ancient *Hebrus*), a river of Turkey, rising in the Balkans and flowing through Eastern Roumelia, southeast to Adrianople, where it bends to the southwest, and falls into the Ægean Sea by the Gulf of Enos. It is over 300 miles long, and navigable to Adrianople, about 100 miles from its mouth.

Maritzburg. See *Pietermaritzburg.*

Mariupol (mä-ri-ö′pol), a town and seaport of S. Russia, in the government of Ekaterinoslav, on the Sea of Azof. Pop. 52,770.

Marius (mā′ri-us), Caius, a Roman general, born in 157 B.C., of obscure parents, at the village of Cereatæ, near Arpinum. He served with distinction at Numantia in 134 B.C. under Scipio Africanus; was made tribune of the people in 119, and acquired much popularity by his opposition to the nobles. In 115 B.C. he was appointed prætor, and a year later propraetor of Spain, which he cleared of robbers; he also increased his influence by his marriage with Julia, the aunt of Julius Cæsar. In 109 B.C. he accompanied the Consul Q. Cæcilius Metellus as his lieutenant to the Jugurthine war. He brought this war and the war in Transalpine Gaul against the Teutons to a victorious close; and six times was chosen consul. On the outbreak of the war against Mithridates, Marius, who had long been jealous of Sulla, endeavored to deprive him of his command, and in the struggle which followed was compelled to flee from Italy. After hairbreadth escapes he landed in Africa amid the ruins of Carthage, and remained there until recalled by Cinna, who had headed a successful movement in his favor. In company with Cinna he marched against Rome, which was obliged to yield, the entry of Marius and his followers being attended with the massacre of most of his chief opponents. On the completion of the term of Cinna's consulship he declared himself and Marius consuls (B.C. 86), but the latter died seventeen days later at the age of seventy.

Marivaux (mȧ-rē-vō), Pierre Carlet de Chamblain de, a French dramatic writer and novelist, born at Paris in 1688. After writing three or four novels and a series of articles of the 'Spectator' type from 1720 onwards he produced a large number of plays, the best being the *Surprise de l'Amour* (1722), the *Jeu de l'Amour et du Hazard* (1730), and *Les Fausses Confidences* (1737). They were characterized by a certain skilfully embroidered phrasing which gave rise to the term *marivaudage*, but they have also no little charm of feeling as well as of intellectual finesse. Two uncompleted novels, *Marianne* and the *Paysan Parvenu*, contain much excellent work. He was made an academician in 1736, and died in 1763.

Marjoram (mar′jō-ram; *Origănum*), a genus of plants of the nat. order Labiatæ. The common marjoram (*Origănum vulgāre*), a native of Britain, is a perennial under-shrub growing among copsewood in calcareous soils. The leaves are small and acute; the flowers reddish, in clustered spikes. Sweet marjoram (*O. Majorāna*) is a biennial, cultivated in gardens. As soon as it blossoms it is cut and dried for culinary use, being employed as a seasoning.

Mark, a term formerly used in England for a money of account, and in some other countries for a coin. The English mark was two-thirds of £1 sterling, or 13*s.* 4*d.*; and the Scotch mark, or merk, was two-thirds of £1 Scots, or 13 1/3*d.* sterling. In the coinage of the German Empire the *mark* is a coin of nearly the same value as the English shilling. A *mark banco* used to be a money of account in Hamburg equal to nearly 1*s.* 6*d.*

Mark, St., the Evangelist, according to the old ecclesiastical writers,

the person known in the Acts of the Apostles as 'John, whose surname was Mark' (Acts, xii, 12, 25), for many years the companion of Paul and Peter on their journeys. His mother, Mary, was generally in the train of Jesus, and Mark was himself present at a part of the events which he relates in his gospel, and received his information partly from eye-witnesses. He was the cousin of Barnabas (Col., iv, 10), and accompanied Paul and him to Antioch, Cyprus and Perga in Pamphylia. He returned to Jerusalem, whence he afterwards went to Cyprus, and thence to Rome. He was the cause of the memorable 'sharp contention' between Paul and Barnabas. Of the close of his career nothing is known; and it is by no means certain even that the various passages, on which the church has based the biographical notes already cited, uniformly refer to the same individual. See *Gospels.*

Mark Antony. See *Antonius.*

Markets. See *Fairs.*

Markham (mark'am), CLEMENTS ROBERT, an English geographer and traveler, was born in 1830, and educated at Westminster School. He was in the navy in 1844-51, after which he traveled in Peru, and published *Cuzco and Lima* (1856). In 1860-61 he visited Peru and India in connection with the establishment of cinchona plantations in the latter country, one result being the publication of *Travels in Peru and India* (1862). In 1865-66 he visited Ceylon and India, and in 1867-68 accompanied the Abyssinian expedition, an account of which he wrote. He was made C.B. in 1871. He has held several government appointments. Other works of his are: *Life of the Great Lord Fairfax; Sketch of the History of Persia; Peruvian Bark; The War Between Peru and Chile*, etc. He was knighted in 1896.—His brother, ALBERT HASTINGS MARKHAM, born in 1841, was an Arctic voyager and writer on polar research and was made a rear-admiral in 1892.

Markham, EDWIN, poet, was born at Oregon City, Oregon, in 1852. In 1899 he attained sudden fame by his remarkable poem, *The Man With the Hoe.* He subsequently devoted himself to literary work.

Markhor (mär'kôr), a wild goat native to Asia. It is closely related to the domestic variety, but has long massive spirally twisted horns. There are four subspecies, distinguished chiefly by variation in the shape of the horns. The extremes are represented by the Astor and Suliman markhor. In the first, which is named from the village of Astor in northwestern Kashmir, the horns form an open spiral and are long and massive; in the second, named from the Suliman range in which it is found, the horns are short and straight with the keel running around them like the thread of a screw.

MARKHOR (*Capra falconeri*)
A. Head of Astor Markhor. B. Horns of Suliman Markhor.

Marking-nut (*Semecarpus Anacardium*), a tree of the cashew family, belonging to India, having a fruit that is roasted and eaten. The black juice of the unripe fruit serves to make a marking-ink.

Markirch (mär'kirh), or ST. MARIE-AUX-MINES, a town of Germany, in Upper Alsace, in a valley on both sides of the river Leber. Pop. 12,372.

Mark Twain. See *Clemens, Samuel Langhorne.*

Marl, an earthy substance essentially composed of carbonate of lime and clay in various proportions. In some marls the argillaceous ingredient is comparatively small, while in others it abounds, and furnishes the predominant characters. The most general use of marl is to improve soils. The fertility of any soil depends in a great degree on the suitable proportion of the earths which it contains; and whether a calcareous or an argillaceous marl will be more suitable to a given soil may be determined with

much probability by its tenacity or looseness, moisture or dryness.

Marlboro (märl'bur-ō), a city of Middlesex Co., Massachusetts, 25 miles W. of Boston. It has extensive manufactures of boots and shoes, also produces shoe machinery, electric appliances, automobiles, hose-pipe, etc. Pop. 14,579.

Marlborough (mȧrl'b'ruh), a municipal borough of England, in Wiltshire, on the Kennet, a tributary of the Thames. There is here a flourishing grammar school, Marlborough College, opened in 1845. Pop. 4401.

Marlborough, a provincial district, New Zealand, occupying the northeast portion of South Island, and bounded by the sea and the provincial district of Nelson. Its extreme length is 130 miles, breadth 60 miles; area, about 3700 sq. miles. In the south of the district are the Wairau Plains, one of the finest sheep tracts in New Zealand. Capital, Picton, situated on an arm of Queen Charlotte Sound. Pop. 11,113.

Marlborough, John Churchill, Duke of, an English general and statesman, second son of Sir Winston Churchill; was born at Ashe, in Devonshire, in 1650. At the age of twelve he became page to the Duke of York (afterwards James II), by whom at sixteen he was appointed an ensign. He

Duke of Marlborough.

was present at the siege of Tangiers, and soon after his return rose to the rank of captain. In 1672 he accompanied the Duke of Monmouth to assist Turenne against the Dutch. At the siege of Maestricht he distinguished himself so highly as to obtain the public thanks of the king of France. On his return to England he was made lieutenant-colonel, and through the influence of his sister Arabella, mistress of the Duke of York, his advancement was rapid. He had a regiment of dragoons presented to him, and strengthened his influence at court by his marriage with Sarah Jennings, an attendant upon the princess, afterwards Queen Anne. In 1682 he obtained the title of Baron of Eyemouth, and a colonelcy in the guards. On the accession of James II he was sent as ambassador to France, and soon after his return was created Baron Churchill of Sundridge, and raised to the rank of general. The same year he suppressed the rebellion of the Duke of Monmouth. On the arrival of the Prince of Orange he joined him at Axminster, and was rewarded by the earldom of Marlborough, and the appointment of commander-in-chief of the English army in the Low Countries. The following year he served in Ireland, where he reduced Cork, Kinsale, and other places. In 1691 he was suddenly dismissed from all his employments and committed to the Tower on the charge of high treason, but soon obtained his release; though it appears that the suspicions against him were not without foundation. On the death of Queen Mary he was made a privy-councilor, and appointed governor to the young Duke of Gloucester; and in 1701 was created by King William commander-in-chief of the English forces in Holland, and also ambassador plenipotentiary to the states-general. Still greater honors awaited him on the accession of Queen Anne in 1702, when he was created captain-general of all the forces at home and abroad, and sent plenipotentiary to The Hague, where he was also made captain-general by the states. In the campaign of the same year he drove the French out of Spanish Guelders, and took Liège and other towns, for which he was created Duke of Marlborough. In 1704 he stormed the French and Bavarian lines at Donauwörth, and in the same year, in conjunction with Prince Eugene, gained the victory of Blenheim over the French and Bavarians, headed by Marshal Tallard and the Elector of Bavaria. The nation testified its gratitude by the gifts of the honor of Woodstock and hundred of Wotton, and erected Blenheim Palace for him, one of the finest seats in the kingdom. During the year 1705 he conducted successful negotiations at the courts of Berlin, Hanover and Venice and the new emperor, Joseph, presented him with the principality of Mindelheim. On the victory of Ramillies, 1706, a bill

was passed to settle his honors upon the male and female issue of his daughters. In the campaign of 1707 his antagonist was the famous Duke de Vendôme, over whom he gained no advantage, and on his return, found that his popularity at court was on the decline. In 1708, in conjunction with Prince Eugene, he gained the battle of Oudenarde. In 1709 he defeated Marshal Villars at Malplaquet, though at a cost ill repaid by the capture of Mons. On the next visit of the duke to England he found that the duchess, by her great arrogance, had so disgusted the queen that a total breach had ensued. Early in 1710 he returned to the army, and with Prince Eugene gained another victory over Villars. During his absence a new ministry, hostile to himself, was chosen, and on his return his command was taken from him, and a prosecution commenced against him for applying the public money to private purposes. He repaired in disgust to the Low Countries in 1712, but returned a short time before the queen's death, and on the accession of George I was reinstated in the supreme military command. Retiring from all public employments, his mental faculties gradually decayed, and he died at Windsor Lodge in 1722, leaving four daughters, who married into families of the first distinction.—His duchess, SARAH JENNINGS, born in 1660; died in 1744, has been almost equally celebrated for her boundless ambition and avarice. The title fell to the descendants of one of their daughters, who have assumed the name of Churchill.

Marline-spike (mar'lin spīk), an iron pin tapering to a point, and principally used on board ship to separate the strands of a rope in order to introduce the ends of some other through the intervals in the act of knotting or splicing; it is also used as a lever in various operations.

Marlitt, E., the pseudonym of the German novelist, Eugenie John, born at Arnstadt, Thuringia, in 1829; died in 1877. She was for a time on the operatic stage and after 1863 wrote a long series of novels, many of which were translated into English.

Marlow. See *Great Marlow.*

Marlowe (mar'lō), CHRISTOPHER, an English poet and dramatist, born at Canterbury in 1564, and educated at Cambridge, whence he proceeded M.A. in 1587. He afterwards settled in London, and became an actor as well as a writer for the stage. Besides six tragedies of his own composition, the best known of which are *Tamburlaine the Great, Edward II, Dr. Faustus,* and the *Jew of Malta,* he left a translation of the *Rape of Helen,* by Coluthus; some of Ovid's *Elegies;* the first book of Lucan's *Pharsalia,* and the *Hero and Leander* of Musæus, completed by George Chapman. He appears to have led a reckless, dissipated life, and died in 1593, from a wound received in a quarrel with a serving-man at Deptford. Marlowe was by far the greatest dramatic writer before Shakespere.

Marlowe, JULIA, actress, born at Caldbeck, England, in 1870, and was taken to the United States at five years of age. She began her theatrical career with child parts, her first mature part being *Parthenia,* in *Ingomar,* in 1888. Since that date she has been a favorite in Shakesperean and other leading parts. She married Robert Tabor, leading man in her company.

Marly (mar-lē), or MARLY-LE-ROI, a village of France, on the Seine, 10 miles west of Paris. It contained a royal castle, built by Louis XIV and destroyed during the revolution.

Marmalade (mar'ma-lād; Portuguese, *marmelo,* a quince), a jellied preparation made from quinces, peaches, apricots, oranges, etc., and portions of their rinds, the most common kind being made from bitter or Seville oranges.

Marmalade-tree, MARMALADE-PLUM (*Lucūma mammōsa*), a tree of the order Sapotaceæ, a native of the West Indies and tropical America, valued for its fruit, the pulp of which resembles marmalade. It is also called *Mammee-sapota.*

Marmala-water (mar'ma-la), a fragrant liquid distilled in Ceylon from the flowers of the Bengal quince (*Ægle Marmĕlos*), and much used by the natives as a perfume for sprinkling.

Marmande (mȧr-mänd), a town of France, department of Lot-et-Garonne, on the Garonne, 50 miles above Bordeaux. Pop. (1906) 9,748.

Marmont (mȧr-mōn), AUGUSTE FRÉDÉRIC LOUIS VIESSE DE, Duke of Ragusa and Marshal of France, was born in 1774, and entered the army as a lieutenant of infantry in his fifteenth year. In 1792 he changed to the artillery, and at Toulon became acquainted with Bonaparte, who chose him for his aide-de-camp. In Italy he greatly distinguished himself, and after the battle of Marengo attained the rank of general of division. He obtained the title of Duke of Ragusa for his defense of Ragusan territory against the Rus-

sians and Montenegrins. He was present at Wagram, and after the truce of Znaim was made field-marshal. He afterwards governed the Illyrian Provinces till 1811, when he succeeded Masséna as commander in Portugal. In conjunction with Soult he raised the siege of Bajadoz, but was ultimately badly b e a t e n at Salamanca by Wellington. In the campaign of 1813 he held the command of an army corps in Germany, and fought in the battles of Lützen, Bautzen and Dresden. In 1814 he fought a final battle under the walls of Paris, but opposition appearing fruitless he surrendered to the allies. This proceeding was one main cause of Napoleon's immediate abdication, and brought Marmont into favor with the Bourbons. After the restoration Louis XVIII made him a peer of France, but he was compelled to withdraw from Paris by the revolution of 1830, and his name was struck off the army list. He accompanied Charles X in his exile, and afterwards traveled, publishing the results of his travels in 1837-39. He also wrote *Esprit des Institutions Militaires* and his own memoirs. He died at Venice in 1852.

Marmontel (mår-mo̤n-tel), Jean François, a French writer, born in 1723; died in 1799. After acting as a teacher of philosophy in a seminary at Toulouse he in 1745 went by Voltaire's advice to Paris, where his tragedies *Denys le Tyran* (1748) and *Aristomène* (1749) brought him considerable celebrity. By the favor of Madame Pompadour he was appointed to a post in connection with the royal buildings. In 1761 he published his first series of *Contes Moraux* ('Moral Tales'). In 1763 he succeeded Marivaux as a member of the French Academy, and he was appointed historiographer of France. In 1783 he was elected secretary to the French Academy. On the breaking out of the revolution he retired to a cottage in Normandy, where he wrote a new series of tales and *Memoirs* of his own life. He also wrote *Bélisaire* (1767), *Les Incas* (1777), articles for the *Encyclopédie*, etc.

Marmora (mär'mo-ra), or Marmara, Sea of (anciently *Propontis*), an inland sea, lying between European and Asiatic Turkey, communicating with the Mediterranean by the Dardanelles, and with the Black Sea by the Bosporus; length from Gallipoli to the head of the Gulf of Izmid, 177 miles; greatest breadth, rather more than 50 miles. It contains several islands, of which the largest is Marmora, famous for its quarries of marble and alabaster.

Marmose (mår'mōs), a marsupial quadruped resembling the opossum, but less, being only about 6 inches in length exclusive of the tail; the

Marmose (*Didelphys murina*).

Didelphys murīna of Cayenne, *D. dorsigĕra* of Surinam. It carries its young about with it on its back.

Marmoset (mår'mu-set), a name of several small South American monkeys, the smallest of the monkey tribe. They are agile in their movements, possess long, non-prehensile tails, and have a thick woolly fur. They bear a close resemblance to squirrels in general appearance, feed upon fruit and insects, and occasionally upon the smaller birds and their eggs. The marmoset family (Hapalidæ) is generally divided into two genera, *Hapăle* and *Midas*, each including a great number of distinct species, the most familiar being the Black-eared marmoset (*Hapale Jacchus*) and its varieties *H. penicillāta*, *H. vulgāris*, etc. These are also known by the name of Ouistiti.

Marmot (mår'mut), a rodent quadruped of the genus *Arctŏmys*, classed with the squirrels. They are thick-bodied, have short tails and short legs, and live in burrows, which are generally excavated in mountainous situations, and consist of a series of galleries in which whole communities reside. During the winter they lie dormant. The marmots inhabit Europe, Northern Asia and North America. The Alpine or European Marmot (*Arctŏmys Alpīnus*) is found in plenty on the Alps, and averages a rabbit in size. The prairie-dog or prairie-marmot, or wistonwish, of North America (*Cynŏmys Ludoviciānus*) is the most familiar American species. Another species found in America is the woodchuck of the middle American states (*A. monax*).

Marne (märn; Latin, *Matrŏna*), a river of France, the largest tributary of the Seine on the right, rises in the department of Haute-Marne, and enters the Seine about 3 miles above Paris. It has a course of about 280 miles, of which 210 miles are navigable.

Marne, a department of France, bounded by Ardennes, Aisne, Seine-et-Marne, Aube, Haute-Marne and Meuse; 67 miles long by 60 miles broad; area, 3158 square miles. About two-thirds of it is arable, and the crops, chiefly rye and oats, more than supply the consumption. The vine is largely cultivated; but though the champagnes of Rheims and Epernay are famous, the general produce of the vineyards is indifferent. Châlons-sur-Marne is the capital. Pop. (1906) 434,157.

Marne, Haute (Upper Marne), a department of France, bounded by Meuse, Marne, Aube, Côte d'Or, Haute-Saône and Vosges; area, 2401 sq. miles. Ramifications of the Vosges make the greater part of the surface mountainous, and the elevated plateau of Langres in the department forms part of the great European watershed. The principal rivers are the Marne, with its tributaries, and the Meuse. The ordinary agricultural crops equal the consumption, and the wine is partially exported. The forests are extensive, and furnish fuel for smelting the ironstone of the department. The coal-measures are partially developed, but the prevailing rock is Jura limestone. Chaumont is the capital. Pop. 224,888.

Maronites (mar'on-īz), a sect of eastern Christians, whose origin was a consequence of the Monothelite controversy. (See *Monothelites.*) On the condemnation of the Monothelites by Anastasius, early in the eighth century, the remnant of this party survived in the *Maronites*, so named from their founder Maron—a society of monks in Syria, about Mount Lebanon, which is mentioned as early as the sixth century. They became a warlike mountain people, who defended their political and religious independence boldly against the Mohammedans. Their political constitution is that of a military commonwealth. Since the twelfth century they have several times submitted to the pope and joined the Roman Catholic Church, without giving up their own peculiarities. Their head is called the *Patriarch of Antioch*, although his residence is in the monastery of Kanobin, upon Mount Lebanon; and he gives an account every ten years to the pope of the condition of the Maronite Church. Since 1584 there has been a Maronite college established at Rome for the education of clergymen. At present the Maronites are supposed to number about 150,000. In consequence of the sanguinary conflicts between the Maronites and Druses, June, 1860, both communities are now subject to one governor appointed by the Porte, with the title of governor of the Lebanon. See *Druses.*

Maroons (ma-rönz'), the name given to runaway negroes in Jamaica and in some parts of South America. In many cases they rendered themselves formidable to the colonists. When Jamaica was conquered by the English in 1655 about 1500 slaves retreated to the mountains, and continued to harass the island till 1795, when they were reduced by the aid of bloodhounds.

Maros (mä'rosh), a river of Hungary which enters the Theiss at Szegedin after a course of 400 miles.

Maros-Vásárhely (mä'rosh-vä'särhel-y'), a town of Transylvania, on the Maros, in a beautiful and fertile district, 54 miles N. N. E. of Hermannstadt. Pop. 19,522.

Marot (mä-rō), Clement, a French epigrammatist and writer of light lyrical pieces, born at Cahors in 1495. He went to Paris as page of Margaret of France, duchess of Alençon, whose brother Francis I he afterwards accompanied to the Netherlands. In 1525, having followed the king to Italy, he was wounded and made prisoner in the battle of Pavia. After his return to Paris he was suspected, possibly on the charge of his mistress Diana of Poitiers, of being favorable to Calvinism, and was thrown into prison. During his confinement he wrote *L'Enfer*, a satire on his judges; and a modernized edition of the *Romance of the Rose;* and the king finally set him at liberty. His connection with Margaret, now Queen of Navarre, with whom he had quarreled, was renewed, but he soon went to Italy, and thence to Geneva (1543), where Calvin succeeded in making him a nominal proselyte. He recanted, however, and returned to Paris; but being again in danger as a suspected heretic, he fled to Turin, where he died in poverty in 1544. His translation of the Psalms, made in conjunction with Beza, was long used in the Protestant churches in France, though his own life was marked by complete religious indifference. The combination of satirical humor, naïveté, and delicacy exhibited in his works is known as the *Style Marotique*, of which La Fontaine furnishes the best subsequent examples.

Marque (mark), Letters of, or Letters of Marque and Reprisal, a license or extraordinary commission granted by a sovereign or the supreme power of one state to the citizens of this state to make reprisals at sea on the subjects of another, under pretence of indemnification for injuries received;

that is, a license to engage in privateering. Letters of marque were abolished among European nations by the Treaty of Paris of 1856. The United States of America was invited to accede to this agreement, but declined.

Marquesas (mȧr-kā'sȧs; Fr. *Marquises*), an island group in the South Pacific Ocean, lat. 8° to 11° S.; lon. 138° 30′ to 143° W., belonging to France, composed of twelve islands and islets. Their coasts are generally inaccessible, rising from the water like walls; but in Nukahiva, the largest, there are one or two excellent natural harbors. Hiva-oa is the next in size. Some of their mountains reach an elevation of about 3500 feet; the intervening valleys are singularly fertile and picturesque. Their principal productions are yams, bread-fruit and cocoanuts. They were discovered in 1595.

Marquetry (mȧr'ket-ri; Fr. *marqueteric*), inlaid cabinet work in which thin slices of different colored wood, sometimes of ivory, pearl, shell, or metal, are inlaid on a ground usually of oak or fir, well seasoned to prevent warping.

Marquette (mȧr-ket), JACQUES, Jesuit missionary and explorer in North America, born in Picardy, France. After spending several years in mission work, he led a party down the Illinois and the Mississippi to the Arkansas. Died in 1675.

Marquette, a city and summer resort, capital of Marquette County, Michigan, on the shore of Lake Superior, 430 miles N. of Chicago. It has a good harbor and immense docks for the shipment of iron ore, which is abundant in the county. There is also an extensive brownstone quarry, large machine shops and blast furnaces, powder works, woodworking factories, etc. There is a State normal school, a state prison, and a house of correction. Pop. 11,503.

Marquis (mȧr'quis), MARQUESS (Fr. *marquis;* Ital. *marchesc;* Ger. *markgraf*), a title of honor next in dignity to that of duke, first given to those who commanded on the marches or frontiers of countries. The title was first introduced into England by King Richard II, in the year 1387, but fell into disuse until the reign of Edward VI, who created the Marquisate of Winchester in 1551. The corresponding female title is *marchioness.*

Marriage (mȧr'ij), a solemn contract between a man and woman, by which they are united for life and assume the legal relation of husband and wife. Different localities have different forms of the institution, the most broadly marked of which are connected with the right to have only one wife—*monogamy*, or a plurality of wives—*polygamy. Polyandry*, by which a woman may have several husbands, is known to have existed in ancient times, and still exists in certain localities, as in Thibet. Among the most civilized communities monogamy is the prevailing practice. Though the Church of Rome ranks marriage among the sacraments, and religious observances are almost everywhere customary on its celebration, the law regards it as nothing more than a civil contract. To render valid the civil contract constituting marriage in England and the United States, it is requisite that the free will of each of the parties should be spontaneously exercised, and that each should be capable of giving an intelligent consent. By common law the age of consent is fourteen for males and twelve for females. This prevails in England, and in the United States except where changed by State legislation. In the United States marriage is regarded as being entirely based on contract or on the present mutual consent of the parties; solemnization by a clergyman or by a magistrate, the presence of witnesses, and all the customary forms and ceremonies being simply convenient means of perpetuating the evidence of the contract.

Marrow. See *Medulla.*

Marryat (mȧr'ri-at), FREDERICK, an English novelist and naval officer, born in 1792. In 1806 he entered the navy as midshipman on board the *Impéricuse*, commanded by the celebrated Cochrane, afterwards Lord Dundonald; and having served with distinction and attained the rank of captain he retired in 1830. His first attempt in literature was made in 1829, by the publication of *Frank Mildmay.* His success led to an extensive series of works of the like kind, including *The King's Own, Peter Simple, Jacob Faithful, Japhet in Search of a Father, Midshipman Easy, The Pacha of Many Tales*, and others. He was also the author of a *Code of Signals* for the Merchant Service (1837). Captain Marryat's novels are remarkable for broad humor and fidelity of description as regards sea life, but he cannot be said to be a great master of plot. He died at Langham, Norfolk, in 1848. One of his daughters, Florence Marryat, gained distinction as a novelist. See *Ross-Church.*

Mars (mȧrz), the Roman god of war, at an early period identified with

the Greek *Arēs*, a deity of similar attributes. Like Jupiter he was designated *father*, and was regarded in particular as the father of the Roman people, Romulus and Remus being the fruit of his intercourse with Rhea Sylvia. Several temples at Rome were dedicated to him. His service was celebrated not only by particular *flamines* devoted to him, but by the College of the Salii, or priests of Mars. The month of March, the first month of the Roman year, was sacred to him. As the tutelary deity of Rome he was called *Quirinus*, in his character as the god of war *Gradīvus* (the striding). Ares, the Greek god of war, was the son of Zeus (Jupiter) and Hera (Juno). He is represented as terrible in battle, but not as invulnerable, since he was wounded at various times by Heracles, Diomedes and Athena. He is represented as a youthful warrior of strong frame, either naked or clothed with the chlamys. The chief seats of the worship of Ares were in Thrace and Scythia.

Mars, the planet which lies next beyond the orbit of the earth. It moves around the sun in 686.9797 of our mean solar days, at the average distance of 139,312,000 miles, its greatest and least distances being 152,284,000 and 126,340,000 miles; its orbit is inclined to the ecliptic at an angle of 1° 51′ 5″; its distance from the earth varies from about 35,000,000 to 244,000,000 miles; it rotates on its axis in 24 hours 37 minutes 22 seconds; the inclination of its axis, or the angle between its equator and its orbit, is 28°; its diameter is about 4400 miles. Its surface bears some degree of resemblance to that of the earth, though with variations of singular character. These consist of canal-like markings covering much of the surface and which have given rise to much controversy, some astronomers contending that they are irrigation canals of artificial origin, and indicate that Mars is inhabited. This theory however, is not widely accepted. The reddish hue of Mars is one of its characteristic features. About every 8 years 7 months it is in perihelion and perigee at the same time, and has a wonderful brilliancy. At its poles are white portions, which decrease and increase in size at the beginning and end of the Martial summer, so that the poles are supposed to be surrounded with snow, though much doubt is felt regarding this. In 1877 two satellites, both very small bodies, were discovered by Professor Hall of the Naval Observatory, Washington. The outer one, 14.500 miles distant from the center of Mars, revolves round the planet in a period of 30 hours 14 minutes; the inner one, 5800 miles from the center of Mars, has a period of 7 hours 38 minutes.

Mars, Anne Françoise Hyppolite Boutet, a French actress, born at Paris in 1779. As *Célimène* in Molière's *Misanthrope*, and *Elmira* in *Tartuffe*, as well as in several similar characters in the plays of Marivaux, she was superb. Louis XVIII settled on her, as well as on Talma, a pension of 30,000 francs. She quitted the stage in 1841, and died at Paris in 1847.

Marsala (mär-sä′lȧ), a seaport of Sicily, on the promontory of Cape Boeo, 18 miles s. s. w. of Trapani. The principal edifice is a large cathedral. The harbor has been so silted up as to admit only small vessels. See *Lilybæum*. Pop. 57,567.

Marsden (marz′den), William, oriental scholar, born in Dublin in 1754, was sent out early in life to Sumatra, in the East India Co.'s service, and returned to England in 1779. In 1795 he became chief secretary to the admiralty, retiring in 1807. Among his works are: *History of Sumatra, Dictionary of the Malayan Language; Grammar of the Malayan Language; Translation of the Travels of Marco Polo*, with a commentary; and *Numismata Orientalia*. He died in 1836.

Marseillaise Hymn (mȧr-se-lāz′), the war-song of the French Republic. The words, and, as is generally believed, the music, were written in 1792 by Rouget de l'Isle, an officer in garrison at Strasburg, on the occasion of a body of volunteers leaving that city for the war against Austria and Prussia, and the poem was entitled by him *Chant du Guerre de l'Armée du Rhin* ('War-song of the Army of the Rhine'). It was called *Marseillaise* because first sung in Paris by volunteers from Marseilles.

Marseilles, French Marseille (mȧr-sālz′, mȧr-sā-yė; Latin, *Massilia*), a city and the principal commercial seaport of France, on the Mediterranean, capital of the department of Bouches-du-Rhône. It is situated on the northeastern shore of the Gulf of Lyons, and lies in the form of an amphitheater round a natural harbor of modern size now known as the Old Harbor. From the inner end of the harbor runs inland one of the finest of the city thoroughfares, called the Cannebière next the harbor, while at right angles to this another great thoroughfare or broad avenue runs through the city. Though a handsome city as a whole, Marseilles is not rich

in public edifices. The most deserving of notice are the large new cathedral in the Byzantine style; the church of Nôtre Dame de la Garde, on a hill of same name; the church of St. Victor; the Hôtel de Ville; the Prefecture; the Palais des Arts de Longchamp, with picture gallery and natural history museum; the exchange; public library; and the triumphal arch through which the town is entered on the side of Aix. The harbor is strongly defended by various works. What is called the New Harbor consists of a series of extensive docks along the shore to the west, with a protecting breakwater in front. In recent times Marseilles has made great progress in its extent, street improvements, population and commerce, largely owing to the conquest of Algeria and the opening of the Suez Canal. The most important manufactures are soap, soda and other chemical products; also olive and other oils, sugar, machinery, iron and brass work, candles, glass, earthenware, etc. The trade is chiefly in soap, olive oil, wine, brandy, corn, flour, dried fruits, tobacco, wool, skins, iron, cotton, etc.— Marseilles was founded by a colony of Greeks from Asia Minor about 600 years before Christ, the original name being Massalia. It attained great prosperity as a Greek colonial center, and the Greek language is said to have been spoken here till several centuries after Christ. It was taken by Cæsar in B.C. 49. On the decline of the Roman Empire it became a prey to the Goths, Burgundians and Franks. In 735 it fell into the hands of the Saracens, and in the tenth century it came under the dominion of the counts of Provence, and for some centuries after followed the fortunes of that house. Pop. (1906) 517,498.

Marsh, GEORGE PERKINS, scholar and diplomatist, born at Woodstock, Vermont, in 1801. He was graduated at Dartmouth College, studied law, and practiced at the bar. In 1842-49 he was a member of Congress, and in 1851 American minister at Constantinople. From 1861 till his death in 1882 he was American minister to Italy. He published a *Grammar of the Old Icelandic Language, The Origin and History of the English Language, The Earth as Modified by Human Action*, etc.

Marsh, OTHNIEL C., naturalist, born at Lockport, New York, in 1831. He devoted himself to the investigation of extinct vertebrate animals. From 1883 he was President of the National Academy of Science. In 1866 he was appointed professor of palæontology in Yale College, and was distinguished for the many species of extinct vertebrate animals described by him, largely from the Rocky Mountains. He wrote *Odontornithes, Dinocerata*, etc., with a large number of scientific papers. He died in 1899.

Marshal (mär'shal), French MARÉCHAL, a word of German origin signifying originally a man appointed to take care of horses. A similar term is the French *connétable* or constable, from L. *comes stabuli* (count or master of the stable). The marshal of the German Empire derived his origin from the Frankish monarchs, and was equivalent to the *comes stabuli* or *connétable*. He had to superintend the ceremonies at the coronation of the emperor, and on other high occasions. There is still a marshal at the head of the households of German sovereigns. In France *maréchal de France* is the highest military honor. In Germany *general-field-marshal* is the highest military honor. In the United States a marshal is an executive officer (resembling the sheriff) connected with the United States courts.

Marshall, a city, capital of Saline County, Missouri, 85 miles E. of Kansas City, near the Salt Fork of the Black River. There are salt springs nearby and coal mines in the vicinity. It has carriage and wagon factories, etc. Here is the Missouri Valley College and a state asylum for the feeble-minded. Pop. 4869.

Marshall, a city of Texas, capital of Harrison County, 40 miles W. of Shreveport, La. Oak and pine timber is plentiful in the vicinity, and there are car-wheel works, saw and planing mills, cotton-seed oil mill, ice factory, etc. It is the seat of Bishop College (colored), Wiley University, and other educational institutions. Pop. 11,452.

Marshall, JOHN, an eminent jurist and statesman, born at Germantown, Virginia, in 1755. He became a captain in the Revolutionary war and took part in several battles, became a lawyer, and in 1788 advocated the adoption of the Federal Constitution in several powerful speeches. He was elected to Congress in 1799. In 1800 he was appointed Secretary of State by President Adams. He had long been at the head of the Virginia bar, and in the branches of international and public law had no superior in the country. On January 31, 1801, he was appointed Chief-Justice of the Supreme Court of the United States, and held this high office for thirty-four years, his decisions being regarded as the standard authority on

constitutional questions. No man has equaled him in developing the fundamental principles of the Constitution. He died in 1835.

Marshalltown (mar'shal-toun), a city, capital of Marshall County, Iowa, is situated near the Iowa River, 50 miles N. E. of Des Moines. Here is located the Iowa Soldiers' Home. Large quantities of grain are shipped, there is a large pork-packing establishment, and manufactures of furnaces, engines, machinery, glucose, and many other industries. Pop. 13,374.

Marshalsea (mär'shal-sē), formerly one of the London prisons, set apart for the detention of debtors.

Marsh-elder. See *Guelder-rose.*

Marshfield, a city of Wood County, Wisconsin, on the Wisconsin Central and other railroads, 26 miles N. W. of Grand Rapids. It has manufactures of furniture, stoves, wood veneer, excelsior, bed-springs, etc. Pop. 5783.

Marsh-gas. See *Fire-damp.*

Marsh-harrier, a British bird of prey. It is sometimes called the *Moor-buzzard.*

Mars' Hill. See *Areopagus.*

Marshmallow (marsh-mal'ō), *Althæa officinālis,* a common European plant, growing in marshes, especially near the sea, in great abundance. It is employed medicinally as a demulcent, and is the *guimauve* of the French, used in the preparation of demulcent lozenges. It is perennial, and has a white, fleshy, carrot-shaped root, which may be used as food. The stem is from 2 to 3 feet high, both leaves and stem being covered with a soft down. The flowers are flesh-colored. The hollyhock (*A. rosea*) is another species.

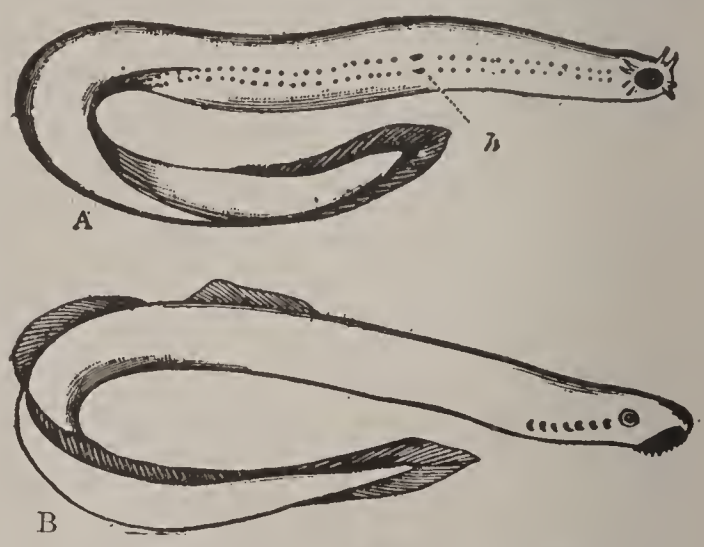
Marshman (marsh'man), JOSHUA, an English missionary, born in 1768, and sent in 1799 by the Baptist Missionary Society to Serampore, where he had Carey, Ward, and others as fellow-laborers. He translated a great portion of the Bible into Chinese, published the original text and a translation of the works of Confucius (1811), a Chinese grammar (1814), and with Carey a *Sanskrit Grammar* (1815) and a *Bengali-English Dictionary* (1825). He died at Serampore in 1837.—His son, JOHN CLARK MARSHMAN (1794-1877), founded the first English weekly newspaper in India, the *Friend of India,* besides being the author of a popular *History of India,* Lives of Carey, Marshman and Ward, and *Memoirs* of Havelock, his brother-in-law.

Marsh-marigold (mar'i-gōld; *Caltha palustris*), a plant of the nat. order Ranunculaceæ, is a common wild plant found in meadows and by the sides of wet ditches. It has kidney-shaped, shining leaves, and large yellow flowers, and partakes of the acridity common to the order.

Marsh-rosemary (rōs'ma-ri), the North American name for *Statice Limonium,* a salt-marsh plant of North America and Europe, the root of which is a strong astringent, and sometimes used in medicine.

Marsh-samphire (sam'fīr), a much-branched, leafless, jointed, succulent plant, *Salicornea herbacea,* found on muddy or moist sandy shores, and frequent in England and Ireland. It is eaten by cattle, and makes a good pickle. It is also named *Glasswort* and *Saltwort.*

Marsipobranchii (mar-si-pō-brank'-i-ī; Gr. *marsipos,* a pouch, and *branchia,* gills), the order of fishes comprising the hag-fishes and



MORPHOLOGY OF MARSIPOBRANCHII.

A, *Myxine glutinosa,* the Hag-fish, showing the sucker-like mouth, and the two ventral openings (*h*) by which the water escapes from the gills. B, The River Lamprey or Lampern (*Petromyzon fluviatilis*), showing the seven branchial apertures on the side of the neck.

sea lampreys, with pouch-like gills. The organization of these fishes is of a very low grade, as indicated chiefly by the persistent notichord without ossified vertebral centra, the absence of any traces of limbs, the absence of a mandible and of ribs, and the structure of the gills.

Marston (marz'tun), JOHN, an English dramatic author, of the reigns of Elizabeth and James I; educated at Corpus Christi College, Oxford.

He was entered at the Middle Temple, of which society he became lecturer, and died after 1633. He was the author of eight plays, all acted at the Black Friars theater with applause. Six of these were printed in one volume in 1633, and dedicated to the Viscountess Falkland. He assisted Ben Jonson and Chapman in the composition of *Eastward Ho.* He also wrote three books of satires, entitled the *Scourge of Villany* (1599).

Marston, Philip Bourke, an English poet, son of Westland Marston, born at London in 1850. He became blind in his fourth year, and to this the introspective and morbid character of much of his work must be attributed. His poems were collected at various times in the volumes entitled *Songtide* (1870), *All in All* (1875), and *Wind Voices* (1883). He also wrote critical papers and novelettes. A selection of the stories was published after his death under the title *For a Song's Sake.* He died in 1887.

Marston, Westland, an English poet and dramatist, born at Boston in 1820; died in 1890. He went to London to study law, but devoted himself to literature, his first tragedy, *The Patrician's Daughter*, being produced at Drury Lane in 1842 by Macready, Phelps and Helen Faucit. Of his many subsequent plays (collected in two volumes in 1876) the best known are *Strathmore* (1849), *Ann Blake* (1852), and *Life for Life* (1868). He is also the author of several lyrical compositions, some short stories collected in 1861 under the title of *Family Credit*, and a novel, *A Lady in her own Right*, published in 1860.

Marston Moor, in Yorkshire, about 7 miles west of York, a locality celebrated for the battle between the royal forces under Prince Rupert and the troops of the Parliament under Fairfax and Cromwell (July 2, 1644), in which the latter were victorious.

Marsupialia, sup'i-alz; L. *marsupium*, a pouch), an extensive group of mammalia, differing from all others in their organization, and including genera which correspond to several orders of ordinary mammals. They belong to the aplacental mammals, and their most striking peculiarity is the production of the young in an immature state, a feature which renders necessary the pouch in which the immature young are placed immediately on their birth. In this pouch are the mammæ or teats, and sheltered here the imperfect young ones, attached to the nipple by the mouth, remain till fully developed. The marsupials link the mammals, through the Monotremata (which see), to the birds and reptiles. There are many genera both herbivorous and carnivorous, the great bulk of them being confined to the Australian region. The kangaroo and opossum are familiar examples. The Marsupialia are divided into the following sections:—*Rhizophăga* (root-eaters), including the rodent-like wombat; *Poephăga* (grass-eaters), including the kangaroos, and kangaroo-rats or potoroos, all strictly plant-eaters; the *Carpophăga* (fruit-eaters), of which the typical group is the phalangers, the best known being the Australian opossum; the *Entomophăga* (insect-eaters), in which are the American or true opossum, the bandicoots, and the banded ant-eater; *Sarcophăga* (flesh-eaters), of which the best known are the 'Tasmanian wolf' and 'Tasmanian devil.'

Marsyas (mår'si-as), a personage in Greek mythology, who is said to have challenged Apollo to a trial of skill in flute-playing, and, being beaten, was flayed alive by the god.

Martaban (mär-tä-bän'), a small town in Burmah, at one time seat of the Burmese government, on the right bank and near the mouth of the Salwen River, captured by the British in 1824, and again in 1852.

Martagon (mär'ta-gon), a kind of lily, *Lilium Martagon*, the bulbs of which are eaten by the Cossacks.

Martel-de-fer, an ancient weapon having a kind of cross-head forming at one end a pick, and at the other a hammer, axe-blade, half-moon, or other termination.

Martello-towers (mär-tel'ō), the name (of doubtful origin) given to small circular-shaped forts with very thick walls, chiefly built to defend the seaboard. A number of such towers were built on the British coasts, especially in the south, in the time of Napoleon I. They are in two stages, the basement story containing store-rooms and magazine, the upper serving as a casemate for the defenders; the roof is shell-proof. The armament is a single heavy traversing gun.

Marten (mär'ten), the name of several carnivorous quadrupeds of the genus *Mustēla* or *Martes*, family Mustelidæ (weasels). The body of the marten, like that of the weasel, is elongated and slender. The legs are short, the feet being provided with five toes, armed with sharp claws. In habit the martens differ from the weasels in being arboreal, these forms climbing trees with

great ease. The common marten (*Martes* (*Mustēla*) *foina*), is found in Europe generally, as also is the pine-marten (*M. abietum*). They feed on the smaller wild animals, such as rats, mice, etc., but also attack birds and devour eggs. The pine-marten occurs chiefly in North America and in the northern parts of Asia. It is of smaller size than the common marten, possesses a yellowish mark

Pine-marten (*Mustēla Martes* or *Martes abiĕtum*).

on the throat, and has a finer fur largely used for trimmings. It burrows in the ground. The famous sable marten (*M. Zibellina*), which furnishes the valuable sable fur, is nearly allied to the pine-marten. It inhabits Siberia. The American sable is furnished by the *M. leucŏpus;* and Pennant's marten (*M. Canadensis*), or the *fisher*, as it is popularly called, is another well-known species.

Martha's Vineyard, the principal island of Dukes county, Massachusetts, 12 miles W. N. W. of Nantucket, 19 miles long, and from 2 to 10 broad. It contains several towns and seaside resorts.

Martial (mär'shal), in full MARCUS VALERIUS MARTIALIS, a Roman writer of epigrams, was born at Bilbilis, in Spain, A.D. 43, and educated at Calagurris (*Calahorra*), the birthplace of his friend Quinctilian. He went to Rome when young, during the reign of Nero, and lived under Galba and the following emperors. Domitian gave him the rank of tribune and the rights of the equestrian order. In 100 A.D. he returned to Spain to his native city, and died there not earlier than 104 A.D. His celebrity is founded on fourteen books of epigrams, which for the most part depict with no less good sense than pungent wit the life of imperial Rome.

Martial Law, the law by which the discipline of an army is maintained, applying only to persons in actual military service, and only to their conduct in such service. The jurisdiction under the law martial is in a distinct tribunal, known as a court-martial appointed by some superior officer. Under special circumstances of insurrection or rebellion, where the ordinary law is insufficient to protect life and property, it is sometimes necessary to administer the law according to the practice of military courts, by an armed force occupying the disturbed district. The district is then said to be under martial law.

Martin (mär'tin), a name applied to several birds of the genus *Hirundo* or swallows. The one best known is the *H. urbica*, or house-martin, a familiar British bird which builds a globular nest under the eaves of houses, or in the upper angles of windows. In habits it resembles the chimney-swallow, but its tail is less markedly forked, while its nest is also different, that of the chimney-swallow being cup-shaped. See *Swallow.*

Martin, JOHN, an English historical and landscape painter, born at Haydon, near Hexham, in 1789. He was apprenticed to a coachmaker in Newcastle, to learn heraldic painting, and removed in 1806 to London, supporting himself there by painting on glass and on china, and by teaching, while diligently studying the higher branches of art. At the age of nineteen he married. His first picture, entitled *Sadak in Search of the Waters of Oblivion*, was exhibited in 1812. This was followed by various others, of which *The Fall of Babylon* (1819) excited great attention, and *Belshazzar's Feast* (1821) obtained the prize of £200 at the British Institution. His subsequent pictures were numerous and he also executed a series of illustrations of the Bible and for Milton's *Paradise Lost.* Many of his pictures were engraved in mezzotinto by himself. His works display much grandeur of conception and atmospheric effect. They are for the most part landscapes with figures rather than historical paintings in the ordinary sense of the term. He died in 1853.

Martin, ST., ST. MARTIN OF TOURS, was born of heathen parents in Pannonia about the year 316. He served under Constantius and Julian, and went to Gaul. Among other virtuous and benevolent acts he divided his cloak with a poor man whom he met at the gates of Amiens (Ambianum). The legend says that Christ appeared to him in the following night covered with the half of this cloak. Soon after this vision Martin was baptized, in 337. After living many years in retirement he visited his native place, and converted his mother. About

the year 375 he was chosen against his will Bishop of Tours. In order to withdraw himself from the world he built the famous convent of Marmoutiers, and is said to have died about the year 400. He was the first saint to whom the Roman Church offered public adoration. His festival takes place on the 11th of November. See *Martinmas.*

Martin, St., one of the Leeward Islands, West Indies, between the islands of Anguilla and St. Bartholomew, belonging partly to the French and partly to the Dutch; area, 30 square miles. From the salt-water lagoons in the south quantities of salt are obtained. The climate is considered healthy. Nearly all the inhabitants are English. Pop. 7000.

Martin, Sir Theodore, man of letters, born at Edinburgh in 1816, educated there at the High School and university, settled in London in 1846 as solicitor and parliamentary agent. In 1851 he married Miss Helen Faucit, who had played *Iolanthe* in his successful version of Hertz's *King René's Daughter.* He was joint-author with Professor Aytoun of the *Bon Gaultier Ballads,* and he published many volumes of translations in verse—the *Poems and Ballads of Goethe* (1858), *Dramas by H. Hertz and Oehlenschläger* (1854-57), *The Odes of Horace* (1860), *Poems of Catullus* (1861), etc. He is also the author of the *Life of Professor Aytoun* (1867), and of the *Life of the Prince Consort,* on the completion of which (5 vols. 1874-80), he was knighted and made K.C.B. In the same year he was elected rector of St. Andrew's University.

Martineau (mâr'ti-nō), Harriet, an English authoress, of French Huguenot descent, born at Norwich in 1802; died at Ambleside in 1876. Her first work, *Devotional Exercises for the Use of Young Persons,* appeared in 1823. Next came a number of stories, mostly intended to inculcate some useful lesson, such as those having the title of *Illustrations of Political Economy* (1831-34), which were followed by *Illustrations of Taxation* and *Poor Laws and Paupers.* In 1834 Miss Martineau visited the United States, after returning from which she published *Society in America,* and *A Retrospect of Western Travel.* In 1839 and 1840 appeared *Deerbrook* and *The Hour and the Man,* two novels, the first of which especially acquired a wide popularity. In 1848 she issued *Eastern Life, Past and Present,* the result of a visit made by her to the East in 1846. Up to about this time Miss Martineau had been known as a Unitarian, but she now showed a decided leaning towards Positivism, and in 1853 published a condensation of Comte's *Positive Philosophy.* Among her other works of importance may be mentioned her *History of England during the Thirty Years' Peace.* During the last twenty years of her life her writings consist d mainly of pamphlets and contributions to newspapers and periodicals. A remarkably candid autobiography which had been written for many years was published after her death, with some additions by a friend (Mrs. Chapman).

Martineau, James, Unitarian minister and philosophical writer, a younger brother of Harriet Martineau, was born at Norwich in 1805, educated at the Norwich Grammar School, Dr. Lant Carpenter's school at Bristol, and Manchester New College, York. After holding ministerial appointments in Dublin and Liverpool, he became in 1841 professor of mental and moral philosophy in Manchester New College. In 1857 he removed to London, and was minister of Little Portland Street chapel from 1859 to 1872. In 1868 he was appointed principal of Manchester New College (which from 1853 had been in London). He is the author of *The Rationale of Religious Inquiry* (1837), *Endeavors after the Christian Life* (2 vols. 1843-47), *Miscellanies* (1852), *Studies of Christianity* (1858), *A Study of Spinoza* (1882), *Types of Ethical Theory* (1885), etc. He died in 1900.

Martinique (mâr-ti-nēk'), one of the French West India Islands, in the Windward group, 30 miles south by west of Dominica and 20 miles north of St. Lucia. It is of irregular form, high and rocky, about 45 miles long and 10 to 15 broad; area, 380 square miles. Its loftiest summit, Mount Pelée, is 4450 feet high. The climate is hot, but not unhealthy. Hurricanes and earthquakes are not unfrequent. About two-fifths of the island are under cultivation, with sugar-cane, manioc, yams, bananas, sweet-potatoes, coffee and cacao. The mountain slopes are in most parts covered with primeval forests. There are several good harbors, the best of which is Port Royal, on the southwestern side of the island. The island was discovered by the Spaniards on St. Martin's Day, 1493, being then peopled by Caribs, and was settled by the French in 1635. It was twice captured by the British, in 1794 and in 1809, being restored to France in 1814. Its chief town, St. Pierre, with about 30,000 inhabitants, was completely destroyed, with all its

people, by a terrible volcanic explosion in 1902. Pop. 203,781.

Martinmas (mär'tin-mas), the feast of St. Martin of Tours, the 11th of November.

Martinsburg, capital of Berkley county, West Virginia, on the Baltimore and Ohio Railroad, 100 miles W. of Baltimore. It produces carriages, flour, furniture, woolens and worsteds, etc. Pop. 10,698.

Martin's Ferry, a city of Belmont county, Ohio, on the Ohio River, 2 miles above Wheeling. Coal is abundant in the vicinity, and it has large glassworks, a blast furnace, tin mills, engine and machine works, etc. Pop. 9133.

Martius (mart'se-us), KARL FRIEDRICH PHILIPP VON, a German traveler and naturalist, born in 1794; died in 1868. After taking the degree of Doctor of Medicine at Erlangen, he joined Spix in the scientific expedition to Brazil, set on foot by the Austrian and Bavarian governments (1817 to 1820). On his return to Bavaria he was appointed professor of botany and director of the botanic garden at Munich, appointments which he held till 1864, when he retired. He was the author of a large number of botanical works, but is chiefly known through those arising out of his journey to Brazil—*Reise nach Brasilien* (1824-31); *Historia naturalis Palmarum* (1823-45); and *Flora Brasiliensis* (1840-71), the last two of which are among the most remarkable in botanical literature.

Martos (mär'tōs), a town in Spain, Andalusia, in the province of Jaen. It contains a fine thirteenth century church. Martos was taken from the Moors in 1225 by Ferdinand III, who bestowed it on the order of Calatrava. Pop. 17,078.

Martyn (mär'tin), HENRY, missionary, son of a miner, born near Truro, Cornwall, in 1781. He was graduated as senior wrangler at Cambridge in 1797, and in 1805 went out to India as military chaplain. In 1811 he went to Persia, and died in 1812 at Tokat in Asia Minor, while on his way back to Europe. He translated the New Testament into Hindustani and Persian.

Martyr (mär'tėr), PETER (more correctly PIETRO MARTIRE D'ANGHIERA), an Italian historian and geographical writer, born in 1455; died in 1526. In 1487 he entered the service of Ferdinand and Isabella of Spain, who created him counselor of the Indies. Charles V also treated him with favor. His principal works are *De Rebus Oceanicis et Orbe Novo Decades octo*—a history of the discoveries of Columbus and his succesors, from their own narratives; *De Insulis nuper Inventis; De Legatione Babylonica*—an account of his embassy to Egypt in 1501, and his *Opus Epistolarium.*

Martyr, PETER (PIETRO VERMIGLI), Protestant divine, born at Florence in 1500; entered the order of the regular canons of St Augustine at Fiesole in 1516, and in 1519 removed to Padua, where he studied Greek and philosophy. After holding important offices in his order he was compelled in 1542 on account of his religious opinions to take refuge in Zürich. Soon after he became professor of divinity at Strasburg, and in 1547 accompanied Bucer and other reformers, on the invitation of Archbishop Cranmer, to England. He was appointed to the theological chair at Oxford in 1549, but on the accession of Queen Mary was commanded to quit the country, and returned to his Strasburg professorship. In 1556 he removed to Zürich to occupy the office of theological professor. He died in 1562. Peter Martyr was the author of many works on divinity, including Biblical commentaries. His *Epistolæ* were published in 1570; and his *Loci Communes Theologici* in 1580-83.

Martyrology (mär-tėr'ol-o-ji), originally a collection of the acts of the martyrs; now more commonly applied to mere registers of names and deaths of those who have suffered martyrdom for the Christian faith.

Martyrs (mär'terz: Greek for 'witnesses'), a name applied by the Christian church to those persons in particular, who in the early ages of Christianity, and during the great persecutions, suffered ignominy and death, rather than renounce their faith. Festivals in honor of the martyrs seem to have been observed as early as the second century. The Christians offered prayers at the tombs of the martyrs, and thanked God for the example which they had given to the world. The rite was concluded with the sacrament of the Lord's supper and the distribution of alms. Eulogies were also delivered, and accounts of the lives and actions of the deceased read.

Maruts (mä'rutz), in Hindu mythology, the gods or genii of the winds.

Marvell (mär'vel), ANDREW, a political and miscellaneous writer, born at Hull in 1620: died at London in 1678. In 1635 he was sent to Trinity College, Cambridge. On the death of

his father in 1640 he made the tour of Europe; afterwards acted as secretary to the English legation at Constantinople; and on his return was appointed assistant to Milton in his office of Latin secretary. In 1660 he was elected to parliament for his native place, which he represented honorably to the end of his life. Besides a small handful of finely musical poems, he composed much humorous and satirical verse, and was the writer of several political pamphlets. Notwithstanding his opposition to the court his wit commended him to Charles II, who made more than one attempt to win him by bribes, but failed to shake the probity and love of liberty which had gained him the name of the 'English Aristides.'

Marvel of Peru. See *Mirabilis.*

Marx (marks), KARL, a German socialist, born in 1818, studied law and philosophy at Berlin. After editing the *Rheinische Zeitung* at Cologne from 1841 till its suppression, he went in 1844 to Paris, where he took part in the publication of the *Deutsch-Französische Jahrbücher*, and a newspaper *Vorwärts*. Being compelled to flee to Brussels, he there in 1848 became head of the central committee of the socialists. In the same year he made an attempt at Cologne to revive the *Rheinische Zeitung*, but removed to London in 1849. In 1864 he established the *International*, but after the disruption in 1872, when he led the extreme party, he removed from London to New York. He died in 1883. His chief work, the Bible of one group of socialists, was *Das Kapital*, published in 1867.

Mary (mā'ri), THE VIRGIN, the mother of Jesus, according to tradition embodied in the apocryphal gospels the daughter of Joachim and Anna (Luke, i, 32). The story of her life so far as it is given in the New Testament begins with her betrothal to Joseph (Luke, i,), and the narrative of the birth of Christ. She is thrice mentioned during Christ's public ministry (John, ii; Matt., xii, 47; John, xix, 25-27), and once after his death (Acts, i, 14). A tradition asserts that she lived and died at Jerusalem under the care of John; another that she died at Ephesus, to which she and John had retired from the siege of Jerusalem. A later tradition asserts that on her grave being opened three days after her burial only the grave-clothes were found in it. The devotion or veneration paid by Roman Catholics and others to the Virgin Mary is condemned by Protestants in general, who stigmatize it as *Mariolatry*. The title of Mary to veneration did not become official in the orthodox Latin Church till the 6th century, when the Christian Church began to celebrate festivals in her honor, of which the Purification, the Annunciation, and the Visitation (the visits of Mary to Elizabeth) are still retained in Protestant countries. The Greeks and Roman Catholics, and the schismatic churches in the East, observe several feasts besides the above in honor of the Virgin; for instance the birth of Mary, and her death and reception into heaven (by the Roman Catholics called the *Assumption*). The festival of the Immaculate Conception is celebrated only by the Roman Catholic Church.

Mary I, Queen of England, daughter of Henry VIII by Catharine of Aragon, was born in 1516. After her mother's death she was declared illegitimate, but was restored to her rights when the succession was finally settled in 1544. She was bred up by her mother in the Roman Catholic faith, on which account she was treated with rigor under Edward VI. She ascended the throne in 1553, after an abortive attempt to set her aside in favor of Lady Jane Grey. One of her first measures was the reinstatement of the Roman Catholic prelates who had been superseded in the late reign. Her marriage to Philip II of Spain, united as it was with a complete restoration of the Catholic worship, produced much discontent. Insurrections broke out under Cave in Devonshire, and Wyat in Kent, which, although suppressed, formed sufficient excuses for the imprisonment of the Princess Elizabeth in the Tower, and the execution of Lady Jane Grey and her husband Lord Guildford Dudley. England was now formally declared to be reconciled to the pope. As victims of heresy and political conspiracy, nearly 300 perished at the stake, including Cranmer, Latimer and Ridley. Under Philip's influence a war began with France, which ended in the loss of Calais in 1558, after it had been in the hands of the English for above 200 years. This disgrace, and the aversion alike of her subjects and of her husband, told acutely upon Mary's already disordered health, and she died in 1558 after a reign of five years.

Mary II, Queen of England, born in 1662, was daughter of James, duke of York, afterwards James II, by his wife, Anne Hyde, daughter of Lord Clarendon. She was married in 1677 to William, prince of Orange; and when the Revolution dethroned her father, Mary was declared joint-possessor of the throne with William, on whom all

the administration of the government devolved. During the absence of William in Ireland in 1690, and during his various visits to the Continent, Mary managed at home with extreme prudence. She was strongly attached to the Protestant religion and the Church of England. She died of smallpox in 1694. See *William III.*

Maryland, one of the American colonies and of the United States; bounded N. by Pennsylvania, E. and S. E. by Delaware and the Atlantic, S. by Virginia and Chesapeake Bay, and S. W. by Virginia and West Virginia; area, 12,327 square miles, the land area being 9860 sq. miles. The part of the State lying to the east of Chesapeake Bay is called the Eastern shore, and the other on the west the Western shore. The Eastern shore has a low, flat and somewhat sandy surface, covered in many places with stagnant water, which makes ague and intermittent fever prevalent. The western shore gradually rises towards the northwest, where it becomes very mountainous, being traversed by five or six ridges of the Appalachian chain, and attains the height of 3000 feet above sea-level. Beyond this the land again sinks, forming the Hagerstown Valley, part of the great Appalachian Valley. In the extreme west are the beautiful elevated valleys named glades. The chief rivers are the Potomac, the Susquehanna and the Patapsco. Almost all the lower part of Maryland is covered with alluvial deposits. In the Hagerstown Valley there is a full development of the Carboniferous system, with its valuable seams of coal and ores of iron. There are three important coal fields in the state. The other minerals are numerous and some of them of value. The most important crops are Indian corn, wheat and oats. Tobacco is very largely grown. The soil of the Eastern shore is well adapted for peaches and market gardening. The fisheries are productive, and there are extensive oyster beds, surpassing those of any other state. The principal manufactures are canned fruits and oysters, cotton and woolen goods, cordage, bricks and articles in iron; the trade, chiefly foreign, is extensive. A large part of the foreign trade consists in the exportation of canned fruits, vegetables and oysters. Annapolis is the seat of government; but Baltimore is the most important city of the State, and the chief seat of commerce. There is an excellent system of free public schools, and among the higher educational institutions may be noted the St. John's College at Annapolis, and the Peabody Institute (founded in 1857), and the Johns Hopkins University (opened in 1876), both at Baltimore. Maryland received its name from Henrietta Maria, queen of Charles I, by whom this district was granted in 1632 to Sir George Calvert, Lord Baltimore, who designed it as a place of refuge for the Catholics of England. It was one of the original thirteen States. During the Civil war opinion was much divided in the State, but it was retained on the Northern side. Pop. 1,295,346.

Maryport (mā′ri-pōrt), a seaport of England, county of Cumberland, 28 miles west of Carlisle, at the mouth of the Ellen. The industries include iron-founding, brewing, tanning, flour-milling and sail-making. The herring fishery is productive. There are several collieries and iron furnaces. Pop. 11,423.

Mary Stuart, Queen of Scots, was born at Linlithgow Palace in 1542, and was the daughter of James V by his queen, Mary of Lorraine, a princess of the family of Guise. Her father dying when she was a few days old, the regency was, after some dispute, vested in the Earl of Arran, who declined Henry VIII's demand for the hand of Mary for his son Edward. In the summer of 1548 the young queen was sent by her mother to France, where she was educated in a French convent, and in 1558 was married to the dauphin, afterwards Francis II. He died seventeen months after his accession to the crown, in December, 1560, and in August, 1561, the widowed queen returned to Scotland. Mary had, of course, been educated in France as a Roman Catholic, but when she returned to Scotland she found that the influence of the Presbyterians was paramount in her kingdom. Though inclined to have Roman Catholicism again set up in Scotland, after a vain attempt to influence Knox she resigned herself to circumstances, quietly allowed her half-brother, the Protestant Earl of Moray, to assume the position of first minister, surrounded herself with a number of other Protestant advisers, and dismissed the greater part of her train of French courtiers. She even gave these ministers her active support in various measures that had the effect of strengthening the Presbyterian party; but she still continued to have the mass performed in her own private chapel at Holyrood. At first her subjects were quiet, she herself was popular, and her court was one of the most brilliant in Europe. The calamities of Mary began with her second marriage, namely, to her cousin, Lord Darnley, whom she married on July 29, 1565.

MARYLAND AND DELAWARE

Scale of Miles
0 5 10 20 30

WESTERN PART OF MARYLAND

Same scale as large map.

Darnley was a Roman Catholic, and immediately after the marriage the Earl of Moray and others of the Protestant lords combined against the new order of things. They were compelled to take refuge in England, and the popularity of Mary began to decline. In addition to this Darnley proved a weak and worthless profligate, and almost entirely alienated the queen by his complicity in the murder of Rizzio (March 9, 1566), though a reconciliation seemed to be effected between them about the time of the birth of their son, afterwards James VI of Scotland and I of England (June 19, 1566). About the close of the same year, however, Darnley withdrew from the court, and in the meantime the Earl of Bothwell had risen high in the queen's favor. When the young prince James was baptized at Stirling Castle, on December 7, 1566, Bothwell did the honors of the occasion, and Darnley, the father of the prince, was not even present. Once more, however, an apparent reconciliation took place between the king and queen. Darnley had fallen ill, and was lying at Glasgow under the care of his father. Mary visited him, and took measures for his removal to Edinburgh, where he was lodged in a house called Kirk-of-Field, close to the city wall. He was there tended by the queen herself; but during the absence of Mary at a masque at Holyrood the house in which Darnley lay was blown up by gunpowder, and he himself was afterwards found dead with marks of violence on his person (February 9, 1567). The circumstances attending this crime were very imperfectly investigated, but popular suspicion unequivocally pointed to Bothwell as the ringleader in the outrage, and the queen herself was suspected, suspicion becoming still stronger when she was carried off by Bothwell, with little show of resistance, to his castle of Dunbar, and married to him on the 15th of May. A number of the nobles now banded together against Bothwell, who succeeded in collecting a force; but on Carberry Hill, where the armies met on the 15th of June, his army melted away. The queen was forced to surrender herself to her insurgent nobles, Bothwell making his escape to Dunbar, then to the Orkney Islands, and finally to Denmark. The confederates first conveyed the queen to Edinburgh, and thence to Loch Leven Castle, where she was placed in the custody of Lady Douglas, mother of the Earl of Moray. A few days after, on the 20th of June, a casket containing eight letters and some poetry, all said to be in the handwriting of the queen, fell into the hands of the confederates. The letters, which have come down to us only in the form of a translation appended to Buchanan's *Detection*, clearly show, if they are genuine, that the writer was herself a party to the murder of Darnley. They were held by the confederates to afford unmistakable evidence of the queen's guilt, and on the 24th of July she was forced to sign a document renouncing the crown of Scotland in favor of her infant son, and appointing the Earl of Moray regent during her son's minority. After remaining nearly a year in captivity Mary succeeded in making her escape from Loch Leven (May 2, 1568), and assisted by the few friends who still remained attached to her, made an effort for the recovery of her power. Defeated by the regent's forces at the battle of Langside (May 13, 1568), she fled to England, and wrote to Elizabeth entreating protection and a personal interview; but this the latter refused to grant until Mary should have cleared herself from the charges laid against her by her subjects. For one reason or another Elizabeth never granted Mary an interview, but kept her in more or less close captivity in England, where her life was passed in a succession of intrigues for accomplishing her deliverance. For more than eighteen years she continued to be the prisoner of Elizabeth, and in that time the place of her imprisonment was frequently changed, her final prison being Fotheringhay Castle, Northamptonshire. She was at last accused of being implicated in a plot by one Babington against Elizabeth's life, and having been tried by a court of Elizabeth's appointing, was on October 25, 1586, condemned to be executed. There was a long delay before Elizabeth signed the warrant, but this was at last done on February 1, 1587. Mary received the news with great serenity, and was beheaded a week later, on February 8, 1587, in the castle of Fotheringhay. Authorities are more agreed as to the attractions, talents and accomplishments of Mary Stuart than as to her character. Contemporary writers who saw her unite in testifying to the beauty of her person, and the fascination of her manners and address. She was witty in conversation, and ready in dispute. In her trial for alleged complicity in Babington's plot she held her ground against the ablest statesmen and lawyers of England. Besides letters and other prose writings, Mary was the author of some short poems of no great merit. The best is one on the death of her first husband, Francis II. The lines beginning 'Adieu, charmant pays de

France,' long ascribed to her, were written by a French journalist of the eighteenth century.

Marysville, a city, capital of Yuba County, California, at the head of navigation on the Yuba River, 52 miles N. of Sacramento. It contains Notre Dame College, and has fruit canneries, woolen mills, etc. Pop. 5430.

Masaccio (mȧ-sȧt'chō), properly TOMMASO GUIDI, one of the oldest painters of the Florentine school, said to have been born about 1401. In the church del Carmine, at Florence, are some excellent paintings of his, also at St. Clemente in Rome, but in a bad state. Baldinucci and Vasari place Masaccio among the first painters by whom the harshness and difficulty of the art was diminished, and life and expression given to it. He died in 1428.

Masai-Land (ma-sa'i-land), a region in eastern equatorial Africa, between the Victoria Nyanza and the sea, and so named from the Masai, who are its chief inhabitants. It is generally elevated, Mount Kilimanjaro being the chief mountain mass. It contains Naivasha and other lakes. The Masai are a well-built race, not of the negro type, and support themselves partly by cattle-raising, partly by the plunder of their weaker neighbors. It is partly within British, partly within German East Africa.

Masaniello (mas-in-i-el'ō), properly TOMMASO ANIELLO, a celebrated Neapolitan insurgent, born at Amalfi in 1622. He gained a livelihood in Naples as a fisherman and a dealer in fish and fruit, and his outspokenness with regard to Spanish oppression procured him a large faction among the common people. In 1647 Masaniello refused to pay the tax on a basket of fruit brought by him to the city. He was supported by the people, who broke into open rebellion and carried all before them. The Spanish viceroy was forced to make concessions and redress grievances, whereupon Masaniello laid down his arms and returned to his former station. But the great power which he still possessed made him appear dangerous to the viceroy, who invited him to his own house, and probably mingled poison with his wine. In a delirium the unfortunate man ran through the streets of Naples, shooting his best friends, and committing the greatest excesses. He was accordingly assassinated by some of his companions in the rising, but the next day his murderers became victims to the popular rage. Auber has embodied the leading facts in his opera, *La Muette de Portici*, more usually called *Masaniello*.

Masaya (mȧ-sä'yȧ), a town of Central America, in Nicaragua, 12 miles northwest of Granada, in a very fertile district near the volcano of Masaya (3500 feet high). Pop. 20,000.

Mascalonge (mas'ka-long; *Esox nobilior*), a fine North American fresh-water fish of the pike genus, inhabiting the St. Lawrence basin, but also introduced into other waters.

Mascara (mäs-kȧ-rä'), a town in Algeria, picturesquely situated on the south slope of Mount Atlas, 48 miles southeast of Oran, surrounded by a wall. It was a stronghold of Abd-el-Kader, and was taken by the French in 1835 and 1841. Pop. 22,934.

Mascarene Islands, (mäs-kȧ-rēn') the islands of Bourbon, Mauritius and Rodriguez, so called from Mascarenhas, a Portuguese navigator, who discovered Bourbon in 1545.

Masinissa (mas-in-is'a), king of ancient Numidia, at first only of the eastern portion of the country, but later of the whole, having, by the help of the Romans during the second Punic war, defeated Syphax, king of Western Numidia, taking him prisoner with his wife Sophonisba, whose hand had formerly been promised to Masinissa. Masinissa now made her his wife, but Scipio Africanus, fearful of her influence, claimed her as a prisoner of Rome. Unable to resist, Masinissa sent her a poisoned chalice, of which she voluntarily drank. Masinissa commanded the Roman cavalry on the right wing at the battle of Zama, which ended the second Punic war (201 B.C.). His acquisition of a number of Carthaginian provinces led to the third Punic war, in the second year of which he died (148 B.C.), aged about a hundred years. His kingdom, at his own desire, was divided among his three sons, of whom Mastanabal, the youngest, was the father of the notorious Jugurtha.

Mask, a covering for the face, often shaped so as to form a rude representation of the human features. They have been in use from the most ancient times. Among the Greeks they were used particularly in the processions and ceremonies attending the worship of Dionysus (Bacchus). As the origin of Grecian tragedy was closely connected with the worship of Dionysus, masks were used in it even in the beginning. The ancient masks usually covered the whole head, and represented, with the features, the head, hair and eyes. They had mostly very large open mouths, and seem to

have had some effect in strengthening the voice of the speaker, this being required by the immense size of the old theaters. The Roman theater differed little from the Grecian in the use of the mask, which the Italian popular theater, called Commedia dell' Arte, closely resembling the old Roman mime and pantomime, still retains. The mask ordinarily used at masked balls or masquerades is a covering for the head and face made from a light stuff, a common form being the half-mask covering eyes and nose only. See *Masqued Ball.*

Mask, a species of drama. See *Masque.*

Mask, The Iron. See *Iron Mask.*

Maskelonge. See *Masealonge.*

Maskelyne (mas'ke-līn), Nevil, an English mathematician and astronomer, born in 1732; was educated at Westminster and Cambridge, chosen a fellow of the Royal Society, and in 1761 deputed to proceed to St. Helena to observe the transit of Venus. In 1765 he became astronomer royal; and in 1767 commenced the publication of the *Nautieal Almanac*, which he edited till his death. In 1774 he was employed in observations on the eclipses of Jupiter's satellites; and the same year went to Scotland to ascertain the gravitative attraction of the mountain Schiehallien. He died in 1811.

Mason (mā'sun), William, an English poet, born in 1725. He studied at Cambridge, and in 1748 published *Isis*, a poem, in which he satirized the Jacobitism and high churchism prevalent in the University of Oxford. This piece provoked a reply from Thomas Warton, entitled the *Triumph of Isis*. In 1752 he published his *Elfrida*, a tragedy on the Greek model. Having obtained the living of Aston, Yorkshire, he was appointed one of the royal chaplains. In 1759 appeared his *Caraetaeus*, a drama. Some years after Mason was made precentor and residentiary canon at York. One of his principal works, the *English Garden*, a poem, appeared between 1772 and 1782. In 1775 he published the poems of his friend Gray, with a memoir. He also translated Du Fresnoy's *Art of Painting* (1783), and wrote a *Life of William Whitehead* (1788), etc. He died in 1797.

Mason City, capital of Cerro Gordo Co., Iowa, on Lime Creek, 82 miles N. by W. of Marshalltown. Here is an Odd Fellows' Orphans' Home and a National Memorial University. It has marble quarries, foundry and machine shops, and other industries. Pop. 11,230.

Mason and Dixon's Line, the line of 39° 43′ 26.3″ north latitude, which separates the States of Maryland and Pennsylvania. From the time of the grant of the latter territory to William Penn by Charles II, there were active disputes between the family of Penn and that of the Lords Baltimore, the possessors of Maryland, as to the boundary between the two territories. Delaware was first deliminated from Maryland by a line running north and south, and the final boundary line was surveyed in 1763, the line of demarcation being named after the astronomers Charles Mason and Jeremiah Dixon, who traced the greater part of it. The charter to Penn fixed the southern boundary of his province at the 40th degree of latitude, and the dispute was as to whether this meant the beginning or the end of the 40th degree. The first would have extended Pennsylvania southward below Baltimore; the second would have given to Maryland the site of Philadelphia. The boundary, as finally fixed, ran nearly midway between these extremes. Milestones were set up along the whole of this boundary line. The line, as finally drawn, has been popularly supposed to have been the dividing line between the free and slave States; but this is an error, as slavery until abolished by the Fourteenth Amendment to the Constitution was still legal in Delaware, which is both north and east of the line. The line extended westward through three degrees of longitude, to the border of Virginia, the present West Virginia, ending at the peculiar tract of land known as 'the pan-handle,' where a part of West Virginia runs up between Pennsylvania and the Ohio River.

Masonry, Free. See *Freemasonry.*

Mason-spider (*Mygălē* or *Ctenīza cæmentaria*), a spider more commonly known as the 'Trap-door Spider' (which see).

Mason-wasp, a name given to certain hymenopterous insects, especially *Odynērus musarius*, from their ingenuity in excavating their habitation in the sand.

Masoola-boat (ma-sö'la), a large East Indian boat used on the Coromandel coast for conveying passengers and goods between ships and the shore. They stand high out of the water, are difficult to manage, and sail slow; but they sustain shocks that would break up any European boat, the planks of which they are built being

fastened together by cocoanut fibers. They are rowed sometimes with as many as sixteen oars.

Masora, or MASSORAH (mȧ-sō'ra), a Hebrew word signifying 'tradition,' the name of a collection of notes referring to the Hebrew text of the Old Testament, and written in Chaldee chiefly on the margin of Hebrew MSS. These notes are various in their character, critical, grammatical and explanatory, and include an indication of the vowel-points and accentuation of the Hebrew text according to the Jewish tradition. At what time the accumulation of these notes was commenced cannot be ascertained. According to some Jewish writers they were begun in the time of Ezra. A large part of them were compiled in the Jewish schools of Tiberias subsequent to the third century, and the collection was not completed till the eighth century at the earliest.

Masque (mask), or MASK, a dramatic entertainment much in favor in the courts of princes during the sixteenth and seventeenth centuries, in the latter particularly in England. In its earliest form it is perhaps best described as a masquerade with an arranged program of music, dancing, etc., and a banquet. The first masque of this kind in England, according to *Holinshed's Chronicle*, was performed in 1510, and they were frequently introduced into the plays of Shakespere and Beaumont and Fletcher. The parts in the masques of the sixteenth and seventeenth centuries were usually represented by the first personages of the kingdom: if at court the king, queen, and princes of the blood often performed in them. Under James I the masque assumed a higher character, more artistic and literary care being expended in its preparation. In this regard Ben Jonson takes an important place, his masques, despite much that is frigid and pedantic, having not a little genuine poetry. Inigo Jones was for a number of years exclusively employed upon the decorations and elaborate machinery of the court masques, and Henry Lawes wrote the music for several of them. Milton's *Comus* is, from the literary point of view, the most beautiful of the productions which bear the name of masque, though possibly defective in the matter of spectacle and music. The taste for masques decreased in the reign of Charles I, and after the interruption given to the progress of English dramatic art and literature by the Civil war they were not again brought into fashion.

Masqued Ball (maskt bạl), an entertainment, generally of a public character, in which the company are masked or otherwise disguised by dominoes. This kind of amusement became popular in Italy about the year 1512, about which time it was introduced into England by Henry VIII. It is popular in the large cities on the Continent, particularly in carnival time. The *bal costumé*, in which the dancers appear in fancy costumes, but unmasked, is the nearest approach which English taste and law allow to this species of entertainment, which, from its nature, is peculiarly liable to abuse. See *Mask*.

Mass, in the Roman Catholic Church, the prayers and ceremonies which accompany the consecration of the eucharist. The word is used generally for all that part of the Catholic service in which the eucharist is offered. At present the mass consists of four chief parts:—1. The introduction; 2, the *offertorium*, or sacrifice; 3, the consecration; 4, the communion. These four chief parts, of which the latter three are considered the most essential, are composed of several smaller parts, each having its proper denomination. They consist of prayers, hymns, shorter and longer passages of the Holy Scriptures, and a number of ceremonies, which, as the essential point of the mass is the sacrifice of the Lord, consist partly of symbolical ceremonies commemorative of important circumstances in the Saviour's life, or signs of devotion and homage paid to the presence of the Lord in the host. The order of these ceremonies, and of the whole celebration of the mass, is given in the missal or mass-book. The masses are modified according to many circumstances, *e.g.* according to the saint in honor of whom the mass is celebrated, or the seasons of the year connected with different events in the Saviour's life, or the purpose for which the mass is said, as the *missa pro defunctis* (mass for the dead). *Votive mass* is an extraordinary mass, instead of that of the day, rehearsed on some special occasion. *Low mass* is the ordinary mass performed by the priest, without music. *High mass* is celebrated by the priest, assisted by a deacon and subdeacon or other clergy, and sung by the choristers, accompanied by the organ and other musical instruments. Besides these there are different masses according to the different rites; the *Greek mass*, the *Latin mass*, the *Roman* and *Gregorian mass*, etc.

Mass, in physics, the quantity of matter in any body, or the sum of all the material particles of a body. The *mass* of a body is estimated by its weight, whatever be its figure, or whether its bulk

MASSACHUSETTS

Scale of Miles 0 5 10 15 20 25 30

VERMONT
NEW HAMPSHIRE
NEW YORK
CONNECTICUT
RHODE ISLAND
ATLANTIC OCEAN
LONG ISLAND SOUND
BLOCK ISLAND SOUND
BUZZARDS BAY
CAPE COD BAY
Massachusetts Bay
Plymouth Bay
Cape Cod
Nantucket Sound
Vineyard Sound
Marthas Vineyard
Elizabeth Is.
Plum I.
Fishers I.
Block Island
Long Island
Muskeget I.
Monomoy I.
Nantucket Island
Marthas Vineyard Island
No Mans Land

Bennington, Wilmington, Brattleboro, Keene, Manchester, Londonderry, Merrimac, Milford, Nashua, Hinsdale, Winchendon, Ashburnham, Fitchburg, Leominster, Gardner, Athol, Orange, Greenfield, Shelburne Falls, Deerfield, Northfield, Warwick, Royalston, Townsend, Lunenburg, Ayer, Shirley, Harvard, Littleton, Billerica, Chelmsford, Groton, Pepperell, Ashby, Lawrence, Haverhill, Methuen, Salisbury, Newburyport, Seabrook, Amesbury, Merrimac, Windham, Derry, Nashua, Peterborough, Keene, Rowe, Colerain, Charlemont, Savoy, Buckland, Hawley, Conway, Ashfield, Williamstown, Adams, N. Adams, New Ashford, Cheshire, Lanesboro, Pittsfield, Cummington, Hinsdale, Whately, Williamsburg, Worthington, Haydenville, Richmond, West Stockbridge, Rockdale Mills, Becket, E. Lee, S. Lee, Lenox, Tyringham, Great Barrington, Otis, New Marlboro, Sheffield, Mount Ivile, Southfield, Clayton, Canaan, Blandford, N. Blandford, Russell, Holyoke, Chicopee, Westfield, W. Springfield, Granville, Tolland, Southwick, Springfield, Chicopee Falls, Indian Orchard, Monson, Hampden, Long Meadow, Brimfield, Palmer, W. Warren, Charlton Cy., Sturbridge, Southbridge, W. Dudley, Webster, Douglas, Woonsocket, Putnam, Rockville, Manchester, Hartford, Litchfield, New Britain, Bristol, Waterbury, Meriden, Norwich, Willimantic, Plainfield, Danbury, Ansonia, New Haven, New London, Stonington, Thames R., Bridgeport, Long Island, Plum I., Sandy Pt., Dickens Pt., Block Island (To Rhode Island), Pt. Judith, Newport, Providence, Pawtucket, Central Falls, Attleboro, Barrowsville, Dodgeville, Taunton, N. Dighton, Berkley, Seekonk, Somerset, Swansea, Warren, Bristol, Cranston, Warwick, Fall River, Acushnet Sta., Acushnet, Marion, Mattapoisett, Rochester, L. Freetown, Lakeville, S. Middleboro, N. Carver, Carver, Middleboro & Halifax, Kingston, Bridgewater, W. Bridgewater, W. Raynham, Norton, Mansfield, Easton, N. Attleboro, Foxboro, Sharon, Norfolk, Franklin, Blackstone, Wrentham, Uxbridge, Millbury, Northbridge Cen., Oxford, N. Oxford, Auburn, Rochdale, Spencer, Cherry Valley, Leicester, Worcester, No. Brookfield, E. Brookfield, Warren, Ware, Granby, Belchertown, Mt. Holyoke, Easthampton, Southampton, Northampton, Enfield, Gilbertville, New Braintree, Oakham, Barre, Barre Plains, Dana, Prescott, Petersham, Cooleyville, Williamsville, Hardwick, Amherst, N. Hadley, Jefferson, Boylston Cen., Northboro, Westboro, S. Framingham, Framingham, Natick, S. Natick, Dedham, Norwood, Hopkinton, Holliston, Medfield, Medway, W. Medway, Walpole, Norfolk, Sharon, Stoughton, Foxboro, Brockton, Bridgewater, Easton, Mansfield, Attleboro, Norton, Taunton, Middleboro & Halifax, Kingston, Plymouth, Manomet, Chiltonville, Carver, Lakeville, Rochester, Wareham, E. Wareham, Buzzards Bay, Sandwich, Bourne, Monument Beach, Cataumet, Mashpee, W. Falmouth, Falmouth, Woods Hole, Quissett, Vineyard Haven, Oak Bluffs, Edgartown, Gay Head, Chilmark, Aquinnah, Gosnold, Nantucket, Sconset, Siasconset, Wauwinet, Great Pt., Nantucket Har., Muskeget Chan., Monomoy Pt., Chatham, Harwich, Brewster, Dennis, Yarmouth, Barnstable, Hyannis, Centerville, Cotuit, Osterville, Marstons Mills, Hyannisport, Orleans, S. Orleans, Pleasant Lake, Eastham, E. Orleans, Wellfleet, South Wellfleet, Provincetown, North Truro, Truro, Gurnet Pt., Manomet Pt., Duxbury, S. Duxbury, Marshfield, Marshfield Hills, Hanover, Norwell, Hingham, Cohasset, Nantasket, Weymouth, Quincy, Braintree, Randolph, Holbrook, Rockland, Abington, Hyde Park, Brookline, Milton, Newton, Watertown, Boston, Chelsea, Revere, Everett, Malden, Melrose, Wakefield, Lynn, Marblehead, Salem, Peabody, Danvers, Beverly, Manchester, Beverly Farms, Rockport, Gloucester, Folly Pt., Bayview, Hamilton, Essex, Ipswich, Topsfield, Boxford Sta., Andover, N. Andover, Georgetown, Byfield, Newbury, PLUM I., Groveland, Methuen, Haverhill, Amesbury, Seabrook, Merrimac, Windham, Derry, Nashua, Peterborough, Keene, Rowe, Colerain, Charlemont, Savoy, Buckland, Hawley, Conway, Ashfield, Williamstown, Adams, N. Adams, New Ashford, Cheshire, Lanesboro, Pittsfield, Cummington, Hinsdale, Whately, Williamsburg, Worthington, Haydenville, Richmond, West Stockbridge, Rockdale Mills, Becket, E. Lee, S. Lee, Lenox, Tyringham, Great Barrington, Otis, New Marlboro, Sheffield, Mount Ivile, Southfield, Clayton, Canaan, Blandford, N. Blandford, Russell, Holyoke, Chicopee, Westfield, W. Springfield, Granville, Tolland, Southwick, Springfield, Chicopee Falls, Indian Orchard, Monson, Hampden, Long Meadow, Brimfield, Palmer, W. Warren, Charlton Cy., Sturbridge, Southbridge, W. Dudley, Webster, Douglas, Woonsocket, Putnam, Rockville, Manchester, Hartford, Litchfield, New Britain, Bristol, Waterbury, Meriden, Norwich, Willimantic, Plainfield, Danbury, Ansonia, New Haven, New London, Stonington, Thames R., Bridgeport, Long Island, Plum I., Sandy Pt., Dickens Pt., Block Island (To Rhode Island), Pt. Judith, Newport, Providence, Pawtucket, Central Falls, Attleboro, Barrowsville, Dodgeville, Taunton, N. Dighton, Berkley, Seekonk, Somerset, Swansea, Warren, Bristol, Cranston, Warwick, Fall River, Acushnet Sta., Acushnet, Marion, Mattapoisett, Rochester, L. Freetown, Lakeville, S. Middleboro, N. Carver, Carver, Middleboro & Halifax, Kingston, Bridgewater, W. Bridgewater, W. Raynham, Norton, Mansfield, Easton, N. Attleboro, Foxboro, Sharon, Norfolk, Franklin, Blackstone, Wrentham, Uxbridge, Millbury, Northbridge Cen., Oxford, N. Oxford, Auburn, Rochdale, Spencer, Cherry Valley, Leicester, Worcester, No. Brookfield, E. Brookfield, Warren, Ware, Granby, Belchertown, Mt. Holyoke, Easthampton, Southampton, Northampton, Enfield, Gilbertville, New Braintree, Oakham, Barre, Barre Plains, Dana, Prescott, Petersham, Cooleyville, Williamsville, Hardwick, Amherst, N. Hadley, Jefferson, Boylston Cen., Northboro, Westboro, S. Framingham, Framingham, Natick, S. Natick, Dedham, Norwood, Hopkinton, Holliston, Medfield, Medway, W. Medway, Walpole, Norfolk, Sharon, Stoughton, Foxboro, Brockton, Bridgewater, Easton, Mansfield, Attleboro, Norton, Taunton, Middleboro & Halifax, Kingston, Plymouth, Manomet, Chiltonville, Carver, Lakeville, Rochester, Wareham, E. Wareham, Buzzards Bay, Sandwich, Bourne, Monument Beach, Cataumet, Mashpee, W. Falmouth, Falmouth, Woods Hole, Quissett, Vineyard Haven, Oak Bluffs, Edgartown, Gay Head, Chilmark, Aquinnah, Gosnold, Nantucket, Sconset, Siasconset, Wauwinet, Great Pt., Nantucket Har., Muskeget Chan., Monomoy Pt., Chatham, Harwich, Brewster, Dennis, Yarmouth, Barnstable, Hyannis, Centerville, Cotuit, Osterville, Marstons Mills, Hyannisport, Orleans, S. Orleans, Pleasant Lake, Eastham, E. Orleans, Wellfleet, South Wellfleet, Provincetown, North Truro, Truro, Gurnet Pt., Manomet Pt., Duxbury, S. Duxbury, Marshfield, Marshfield Hills, Hanover, Norwell, Hingham, Cohasset, Nantasket, Weymouth, Quincy, Braintree, Randolph, Holbrook, Rockland, Abington, Hyde Park, Brookline, Milton, Newton, Watertown, Boston, Chelsea, Revere, Everett, Malden, Melrose, Wakefield, Lynn, Marblehead, Salem, Peabody, Danvers, Beverly, Manchester, Beverly Farms, Rockport, Gloucester, Folly Pt., Bayview, Hamilton, Essex, Ipswich, Topsfield, Boxford Sta., Andover, N. Andover, Georgetown, Byfield, Newbury, PLUM I., Groveland, Methuen, Haverhill, Amesbury, Seabrook, Salisbury, Newburyport

73° 30′ A 73° B 72° 30′ C 72° D 71° 30 E 71° F 70° 30′ G 70°

1 2 3 4 — 42° 30 — 41° 30

Longitude West from Greenwich

or magnitude be great or small. See *Dynamics.*

Massa-Carrara (mäs′a-kär-rä′a), formerly a small state of Italy, situated on the western slope of the Apennines, bounded principally by Tuscany and the Duchy of Modena. In 1741 it passed into the hands of the house of Modena, with whom, excepting the period of French occupation (1796-1814), it remained until 1859, when it was united with those portions of the duchies of Parma and Modena lying west of the Apennines, and erected into the province Massa e Carrara. The province is celebrated for the Carrara marble. Area, 685 sq. miles; pop. 195,-631.

Massachusetts (mas-sȧ-chū′sets), one of the original United States, bounded north by Vermont and New Hampshire; east by the Atlantic; south by the Atlantic, Rhode Island and Connecticut; and west by New York; area, 8266 sq. miles; capital, Boston. The greatest length is 160 miles; width 47 to 90 miles; the coast line, which has a length of about 250 miles, is indented with deep and extensive bays, of which Massachusetts Bay (which includes the large bays of Boston and Cape Cod), Buzzard and Nantucket bays are the most capacious. The indentations in these bays form excellent harbors, the most commodious of which are Newburyport, Boston Harbor and Marblehead. The islands of Nantucket and Martha's Vineyard, with several others, belong to Massachusetts. The west part of the state is traversed by the Green Mountains, whose loftiest peak rises 3500 feet above sea-level. The most considerable rivers are the Connecticut, Housatonic and the Merrimac. The soil is poor and sandy near the coast, where salt marshes frequently occur, these yielding good crops of hay. The S. E. section has many shallow lakes, and abounds in swamps, producing cedar timber and yielding large crops of cranberries. In the middle and western parts the soil is fertile and well cultivated. Among the chief products are potatoes, hay, maple sugar, honey and dairy materials; tobacco yields good returns and cattle are largely kept. The chief grains are oats, rye and barley; corn being raised for home consumption and wheat, buckwheat and barley raised only in small quantities. A considerable portion of the surface of the ground is still covered with forests, consisting of pine, oak, walnut, birch, maple, ash, cedar, cherry and chestnut. Of fruits the apple gives the largest yield. The climate is liable to extremes of heat and cold. Of mineral products granite is largely quarried, and marble, limestone and brownstone furnish good building material. Iron ore of good quality is mined. Massachusetts is, in regard to the actual amount of its manufactures, the third State in the Union, being excelled in this respect only by New York and Pennsylvania; but in proportion to its area and population it is the first. Lowell is the great center of the cotton manufactures, which rank first among products of industry. Worsted goods, hosiery, silks, linens, etc., are largely manufactured, and boots and shoes form a very large industry. There are numerous forges and furnaces; machine shops, manufactures of edge tools, agricultural implements, cutlery, and many other articles. Shipbuilding is carried on extensively. In shipping Massachusetts is superior to any other State of the Union except New York. Its commerce is large, and it owns more than half the fishing vessels in the United States. The means of internal communication are ample. In connection with the railways may be mentioned the Hoosac Tunnel piercing the Hoosac Mountain in the northwest corner of the State, with a length of 5¾ miles. In educational matters Massachusetts has a high reputation, among its leading institutions being Harvard University, the oldest in the Union, Boston University, Amherst College, Clark University, Williams College, etc. Massachusetts is divided into fourteen counties; and besides the capital, Boston, the chief towns are Worcester, Lowell, Cambridge, Fall River, Lawrence and Lynn. It was at first composed of two colonies—Plymouth colony, first settled by Puritan families who landed in Plymouth in 1620; and Massachusetts Bay colony. These two were united in 1692, under the name the state now bears. The State is now, with the exception of Rhode Island, the most densely peopled in the Union. Massachusetts played a leading part in the American revolution, and was long foremost in literary culture. Pop. 3,366,416.

Massachusetts Bay, a large bay to the east of the central part of Massachusetts, bounded on the north by Cape Ann, and on the south by Cape Cod. It terminates in Boston harbor, on which is the large city of Boston.

Massafra (mȧ-sä-frȧ′), a town of Southern Italy, province of Lecce, 10 miles from Taranto, near the sea and in the center of an important olive-growing district. Pop. 11,026.

Massage (mas′ȧzh, Fr. *masser*, to knead), a form of medical

treatment in which the body of the patient, or some particular part of it, is subjected at the hands of an attendant to a variety of processes technically discriminated as stroking, rubbing, kneading, pinching, pressing, squeezing and hacking. The tendency of this treatment is to assist and stimulate the circulation, and to increase the waste-removing action of the lymphatic vessels, and thus to affect the nutrition, not only of the parts acted upon, but of the whole body, and promote the removal of local swellings, inflammatory products, etc. The process, for which half an hour daily is usually sufficient, is performed upon the naked skin by the bare hands of the operator, no oil being used; and the hands ought to be strong and firm, but soft, very considerable exertion being expended in the operation. The attendant (who is termed a *masseur*, if a man; a *masseuse*, if a woman) needs to be carefully trained, and should have a sufficient knowledge of anatomy to be able to separate out with the fingers a single muscle or group of muscles for treatment, and to trace the direction of the larger vessels and nerve-trunks and act upon them directly. The principal movements should be characterized by a certain uniformity and method. Thus, in stroking with a steady pressure the limbs of the patient, the strokes should always be from the extremities towards the heart, not backwards and forwards in a random way; and in kneading the belly with the heel of the hand, the movements are carried round in the direction of the colon. The treatment has been remarkably successful in cases of nervous disorder of a hysterical kind, and in cases of wasting through imperfect nutrition dependent upon disturbances of stomach, bowels, or liver; and it has proved valuable in diabetes, some of the special diseases of women, and certain cases of paralyzed and contracted muscles.

Massagetæ (mas-saj'e-tē), a collective name given by the ancients to the nomadic tribes of Central Asia who dwelt to the east and northeast of the Caspian Sea. Cyrus lost his life in fighting against them.

Massai. See *Masai.*

Massaua. See *Massowa.*

Masséna (màs-ā-nà), André, Marshal of France, born in 1758 at Nice. In 1775 he entered the French army, in which he became an inferior officer. After fourteen years' service he left the army and returned to Nice, where he married. During the revolution he entered a battalion of volunteers, was elected chief of his battalion in 1792, and in 1793 made general of brigade. In 1794 he was appointed general of division, and took command of the right wing of the French army in Italy, where, at Rivoli and elsewhere, he highly distinguished himself. In 1799 he defeated the Austrian and Russian forces at Zürich, and in 1800, by his defense of Genoa for three months, gave Bonaparte time to strike successfully at Marengo. In 1804 he was created a marshal of the empire. In 1805 he received the chief command in Italy, where he lost the battle of Caldiero, and after the peace of Pressburg occupied the kingdom of Naples. In 1807 he was given the command of the right wing of the French army in Poland, and soon after received the title of Duke of Rivoli. In 1809 he distinguished himself against the Austrians, and at Esslingen his constancy and firmness saved the French army from total destruction. Napoleon rewarded him with the dignity of Prince of Esslingen. In 1810 he took command of the army in Portugal, and forced Wellington within the lines of Torres Vedras, till want of provisions compelled Masséna to retire. Napoleon recalled him from Spain, and in 1812 left him without a command. In 1814 he was made a peer by Louis XVIII, and though on the return of the emperor he acknowledged his authority, he took no active part in the events of the hundred days. He died in 1817.

Massenet (màs-nā), Jules, a French composer, born in 1842. He studied at the Paris Conservatoire, of which in 1878 he became a professor. He is the composer of several operas, of which the best known are *Herodias*, *Don César de Bazan*, and *Manon Lescaut*. His *Scènes Pittoresques* are also well known, and there is a long list of works by him, including the choral works *Maria Magdalene*, *La Vierge*, etc. Died in 1912.

Massey (mas'sē), Gerald, an English poet, born at Tring in 1828, of poor parents, and for some time an errand-boy in London. He subsequently edited the *Spirit of Freedom*, a Radical paper, and in 1854 published his *Ballad of Babe Christabel*, and other poems. The volume attracted the notice of Landor, and the poems issued in succession to it met with no little popularity. For some years Massey wrote poetical criticisms for the *Athenæum*. One of the best of his prose works is the ingenious *Secret Drama of Shakespere's Sonnets*, first published in 1864-72, and since republished. Other works are *A Tale of Eternity and other Poems* (1869), *Concerning Spirit-*

ualism (1872), *A Book of the Beginnings* (1882), and the *Natural Genesis* (1884). For some years he was popular both at home and in the colonies as a lecturer on Spiritualism and various social and socialistic subjects. He died in 1907.

Massico (mas'i-kō; *Mons Massicus*), a mountain in the province of Terra di Lavoro, Naples, Italy, and having on its slopes a town of the same name. The Massic wine has been famous from remote times.

Massicot (mas'i-kot), the yellow protoxide of lead (Pb O), used as a pigment, etc. See *Litharge*.

Massillon (mâs-ē-yōn), JEAN BAPTISTE, a French pulpit orator, born in 1663 at Hyères, in Provence; entered in his eighteenth year the congregation of the Oratory, professed belles-lettres and theology at Montbrison and Vienne; and was called to Paris in 1696 to direct the Seminary of St. Maloire. The applause which he met with in Paris, even at court, was almost without example. Louis XIV gave him special praise, and the deaths of Bossuet and Bourdaloue, in 1704, left him at the head of the French preachers. He pronounced the funeral oration of Louis XIV in 1715, and in 1717 the regent appointed him to the see of Clermont. In the year following he was chosen to preach before Louis XV. He died in 1742. He was the greatest pulpit orator France has produced.

Massillon (mas'sil-on), a city of Stark Co., Ohio, on the Tuscarawas River and the Ohio Canal, 8 miles W. of Canton, surrounded by large coal fields employing thousands of men. There are also sandstone quarries, and deposits of potters' clay and iron ore. Large quantities of wheat, corn, butter and wool are shipped, and there are large manufacturing industries. Here is a State hospital and insane asylum. Pop. 13,879.

Massinger (mas'in-jėr), PHILIP, a distinguished English dramatist, born at Salisbury in 1584. He studied at Oxford, but quitted the university without taking a degree, and repaired to London about 1606. Little is known of his personal history beyond the fact that he was associated with Fletcher, Middleton, Rowley and Dekker in the composition of certain plays. A note of his burial appears in the register of St. Saviour's, Southwark: 'March 20, 1639-1640, buried Philip Massinger, a stranger.' As a dramatist Massinger is more natural in his characters and poetical in his diction than Jonson, and some critics rank him next to Shakespere. In tragedy, however, he is rather eloquent and forcible than pathetic, and he is defective in humor. His best plays are the *Duke of Milan*, *A City Madam*, *A Very Woman*, *The Fatal Dowry*, *A New Way to Pay Old Debts*. The last-mentioned still maintains its place on the stage, chiefly on account of the characters Marrall and Overreach.

Masson (mas'on), DAVID, critical and biographical writer, born at Aberdeen, Scotland, in 1822; was educated at the Marischal College and at Edinburgh University. After engaging in miscellaneous literary work in Edinburgh and London, he was in 1852 appointed to the chair of English language and literature at University College, London. In 1859 he became editor of *Macmillan's Magazine*, and in 1865 accepted the chair of rhetoric and English literature in the University of Edinburgh. His works include his collected contributions to the quarterlies and other magazines (1856, reprinted with additions in 1874); an elaborate and comprehensive study of Milton's life and times (six volumes, 1858-80); *British Novelists and Their Styles* (1859); *Recent British Philosophy* (1865); *Drummond of Hawthornden* (1873); *The Three Devils* (1874); an important edition of Milton's Poems (1877); and a life of De Quincey (1878). He died in 1907.

Massowa, MASSOWAH, or MASSAUA, a seaport on the Red Sea coast of Africa, now belonging to Italy, and capital of the Italian colony of Eritrea. The town stands on a small barren coral island only a few hundred yards from the mainland, and is very hot and unhealthy. It is the natural commercial outlet for the products of the Soudan and northern Abyssinia, and the exports brought by caravans from the interior include rhinoceros horns, gold, ivory, honey, wax, etc. Until 1885 it was an Egyptian possession, but was then taken possession of by Italy. Pop. (exclusive of Italian troops) 7775.

Massys. See *Matsys*.

Mast. See *Ship*.

Master (mas'tėr), in the navy, formerly the name of the officer who had charge of the details of the navigation of the ship under the general orders of the captain. The duties discharged by the master have latterly been consigned to an officer known as *navigating lieutenant*. The rank of master (between that of ensign and lieutenant) still exists in the navy of the United States. In the merchant service, the mas-

ter is the person entrusted with the chief command of the vessel, and usually styled by courtesy captain. He is the confidential servant or agent of the owners, who are bound to answer for a breach of contract committed by him. The master has power to hypothecate or pledge the ship and cargo for necessary repairs executed abroad. He may enforce obedience to his lawful commands by reasonable and moderate chastisement, but has no jurisdiction over a criminal; his business is to deliver him to the proper tribunals. He is compelled to keep a proper log-book, and must produce it, with the ship's papers, on the requisition of the commander of a ship-of-war of his own nation. The master of an American ship must be a citizen of the United States. In Europe generally the qualifications of masters in point of skill and experience must be attested by examination by proper authorities; but in the United States the civil responsibility of the owners for their acts is esteemed sufficient. The master is liable to the owners by whom he is selected and employed.

Master in Chancery, an officer of a chancery court, appointed to assist the chancellor. Causes involving intricate accounts are often referred to a master for hearing. He is often appointed to examine witnesses, to take depositions, to report the facts of a case, to make settlements under deeds, etc.

Master of Arts (M.A. or A.M., *artium magister*), an academical honor conferred by the universities of the United States, Britain, France, Germany, etc., upon students after a course of study and a previous examination in the chief branches of a liberal education, particularly languages, philosophy, mathematics, physics and history. The precise period of the introduction of this title is not known; but even in the twelfth and thirteenth centuries the honor was so highly esteemed in France that the most distinguished men were eager to obtain it. Afterwards, when the universities were multiplied, and many abuses crept in, it lost much of its importance. In the English universities this degree is the highest in the arts faculty. In the German universities the title is merged in that of Doctor of Philosophy (Ph.D.).

Master of the Buckhounds, an officer of the royal household of Britain, in the master of the horse's department. He is entrusted with all matters connected with the royal hunts. He goes out of office on a change of ministry.

Master of the Horse, the third officer in the royal household of Britain, whose duty it is to superintend the royal stables and all horses belonging to the king. He has the privilege of using the royal horses, pages and servants, and rides next to the king on all state occasions. His tenure of office is dependent upon the existence of his political party in power.

Master of the Rolls, an English official, one of the judges of the Chancery Division of the High Court of Justice, the keeper of the rolls of all patents and grants that pass the great seal, and of all records of the Court of Chancery. He ranks next after the Lord Chief-justice of the Queen's Bench, and above the Lord Chief-justice of the Common Pleas.

Master-singers (German, *Meistersinger*), the name of a literary guild or association which flourished in Mainz, Strasburg, Augsburg, Nürnberg and various other German cities, in the fourteenth and fifteenth centuries, in some cases surviving even to recent times. It represented the poetical efflorescence of burgher life as the Minnesingers had represented that of the feudal chivalry. The members of the guild met and criticised each other's productions in accordance with a remarkable series of canons dealing with literary form. Victory in their own competitions carried with it the right to take apprentices in song craft, who at the expiry of their term, and after singing for some time with acceptation, were themselves admitted as full masters. Among the most famous master-singers were Hans Sachs, Henry of Meissen (Frauenlob), Regenbogen, Hadlaub and Muscatblut. The development of artificial canons in the search for novelty ultimately reduced the whole scheme to utter absurdity, the literary productions becoming lifelessly mechanical.

Mastic (mas'tik), a kind of mortar or cement for plastering walls. It is composed of finely ground oolitic limestone mixed with sand and litharge, and is used with a considerable portion of linseed oil; it sets hard in a few days, and is much used in works where great expedition is required.

Mastic, MASTICH, a resin exuding from the mastic tree (*Pistacia Lentiscus*), a native of Southern Europe, North Africa, and Western Asia. The resin, which is principally produced in the Levant, and chiefly in the island of Chios, is obtained by making transverse incisions in the bark, from which it issues in drops. It comes to us in yellow,

brittle, transparent, rounded tears, which soften between the teeth with a bitterish taste and aromatic smell. Mastic consists of two resins, one soluble in dilute alcohol, but both soluble in strong alcohol. It is used as an astringent and an aromatic. Its solution in spirits of wine constitutes a good varnish. Barbary mastic is obtained from the *Pistacia atlantica*, which grows in the north of Africa and the Levant. Mastic is consumed in vast quantities throughout the Turkish Empire as a masticatory for cleansing the teeth and imparting an agreeable odor to the breath. It was formerly in great repute as a medicine throughout Europe. See also *Lentiscus*.

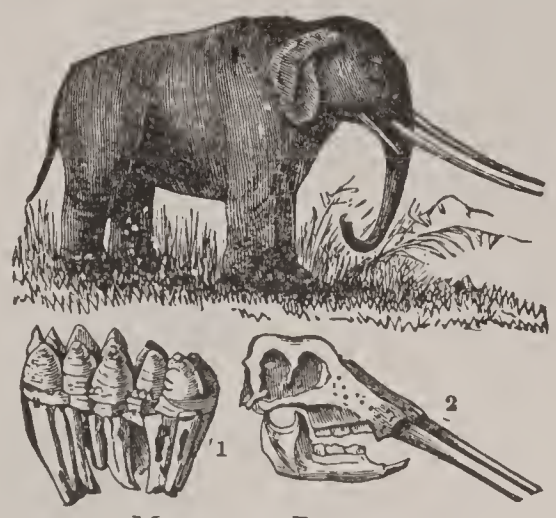
Mastication (mas-ti-kā'shun), the process of division of the food effected in the mouth by the combined action of the jaws and teeth, the tongue, palate and muscles of the cheeks. This process is seen in its typical perfection in the higher Vertebrata only. By it the food, besides being triturated, is mixed with the salivary fluid. Imperfect mastication is a fertile source of indigestion.

Mastiff (mas'tif), a race of large dogs found under various names from Tibet to England. The English mastiff is a noble looking dog with a large head, a broad muzzle, lips thick and pendulous on each side of the mouth, hanging ears and smooth hair, the height at the shoulder usually ranging from 25 to 29 inches. The old English breed was brindled, but the usual color to-day is some shade of buff with dark muzzle and ears. The Tibet mastiff, which is also a fine animal, is common in Tibet and in Bhutan as a house dog.

Mastiff-bat, a name given to an Asiatic and South African bat of the genus *Molossus*, from its head resembling that of the mastiff-dog.

Mastitis (mas-tī'tis), or Mammitis, inflammation of the breast.

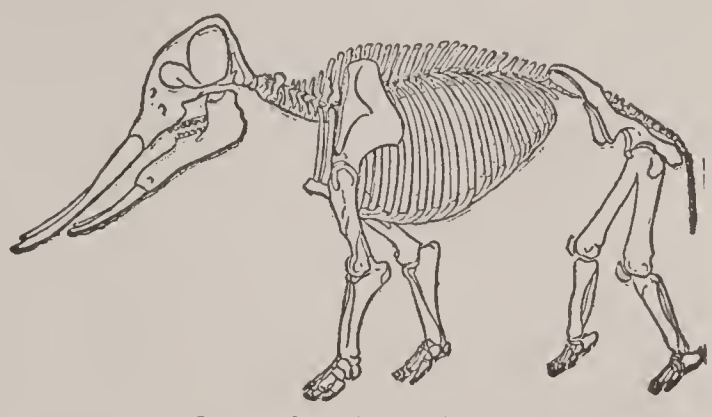
Mastodon (mas'tu-don), an extinct genus of Proboscidea or Elephants, the fossil remains of which first occur in the Miocene rocks of the Tertiary period, and which persist through the Pliocene and Post-pliocene epochs. In general structure the mastodons bear a close resemblance to the existing species of elephants. Their chief peculiarities consist in the dentition and structure of the teeth, from the curious mammillary processes on which the generic name is derived (Greek *mastos*, breast). The geographical range of the mastodons included North America, Europe and Asia—one species, the *Mastodon longirostris*, having inhabited England, Germany, France and Italy. A specimen, almost entire, of the *Mastodon turicensis*, from the Pliocene deposits of



Mastodon Restored.

1, Molar tooth, weighing 17 lbs. 2, Skull of Mastodon of Miocene period.

Piedmont, measured 17 feet from the tusks to the tail; and an American specimen measured 18 feet in length and 11 feet 5 inches in height.



Mastodon *Angustidens*.

Masulipatam (ma-sö-li-på-täm'), a town of India, presidency of Madras, 220 miles N. N. E. from the city of that name, on a low flat on the Bay of Bengal, near one of the mouths of the Kistnah. It consists of the pettah or native town, the European quarter, and the fort, at some distance and now neglected. The town is a station of the Church Missionary Society, and there are both Protestant and Roman Catholic churches. The manufactures consist chiefly of cotton goods, plain or printed. Large ships cannot anchor within 5 miles of the shore. In 1864 a storm-wave swept over the town, which is said to have destroyed 30,000 lives, and Masulipatam has never since regained its prosperity. Pop. 39,507.

Matabele (mat-a-bē'le), a Kaffir race or tribe inhabiting part of South Africa between the Limpopo and

Zambesi, north of the Transvaal, into which they removed from Natal in 1827 under the leadership of their chief Moselikatse. They are a warlike people. Their territory, known as Matabeleland, is now under British protection. Besides the Matabele there dwell here also numbers of the Makalaka and Mashona tribes, its population being estimated at 175,000. In 1893 the Matabele were severely worsted in pitched battles by the forces of the British South African Company, and the territory is now included in British southern Africa.

Matamoros (mat-a-mō′ros), a city of Mexico, department of Tamaulipas, on the right bank of the Rio Grande del Nôtre, about 10 miles above its mouth in the Gulf of Mexico. Pop. 8347.

Matanzas (ma-tan′zas), a seaport on the northwest coast of Cuba, 52 miles east of Havana, with one of the largest, safest and most convenient harbors in America. It has considerable commerce, exporting sugar, molasses, and coffee, and ranking in importance next to Havana. Pop. 36,009. It is the capital of Matanzas province, 3700 sq. miles in area; pop. 202,444.

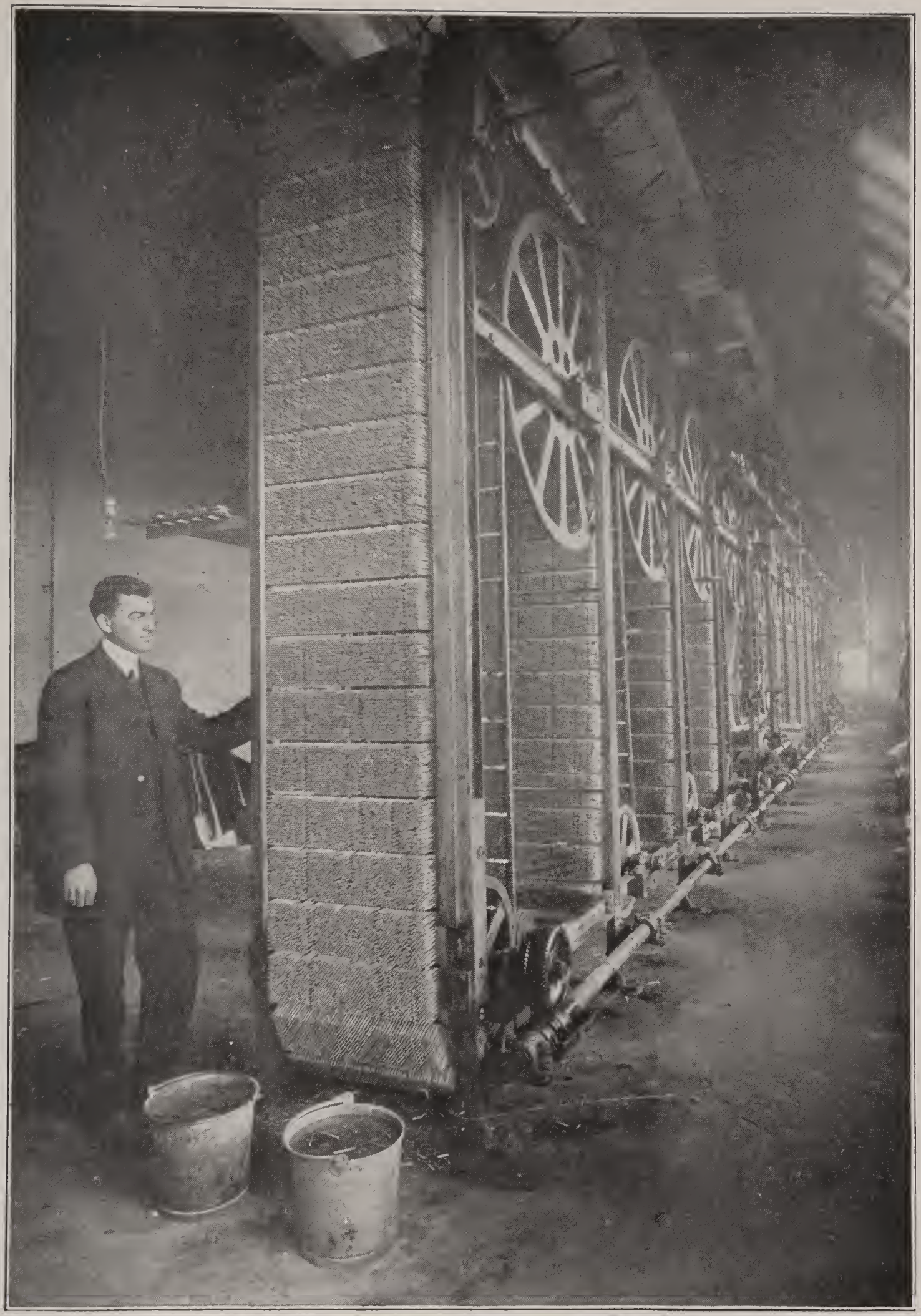
Matapan (mȧ-tȧ-pȧn′), Cape (anciently *Tænărum Promentorium*), the most southern extremity of the Morea, Greece, and of the European continent. It terminates in a high, steep, pyramidal point, at the base of which is a volcanic cavern. Upon its summit are the ruins of a temple, probably of Poseidon.

Mataró (mä-tȧ-rō′), a town of Spain, in Catalonia, on the Mediterranean, 19 miles northeast of Barcelona. It has manufactures of linen, cotton and woolen goods, soap, etc.; and a considerable trade. Pop. 19,704.

Match (mach). In the most common sense of the term, matches are splints or small slips of wood, one end of which is dipped into a composition that ignites by friction or other means. One of the first forms of this article was the brimstone match, which was a thin strip of resinous or dry pine wood with pointed ends dipped in sulphur, which were lighted with tinder ignited by a flint and steel. The lucifer match was introduced in 1827, the inflammable substance being a mixture of chlorate of potash and sulphide of antimony, applied to the match, which had been previously dipped into melted sulphur. The matches were ignited by being drawn smartly through a piece of folded sandpaper. This was succeeded after a few years by the Congreve match, in which phosphorus was substituted for the sulphide of antimony. Many improvements have since been made both in the composition of the igniting materials and in the processes of manufacture. Sulphur, owing to its offensive smell, is now commonly discarded in favor of paraffin. The igniting composition is essentially an emulsion of phosphorus in a solution of gum or glue, combined with a quantity of chlorate of potash, red lead, or nitrate of lead, to increase the combustibility, and some coloring matter as cinnabar, smalt, etc. The use of common phosphorus has led to many accidental deaths and even to willful poisoning. The operatives, also, who are exposed to the phosphoric fumes during the process of manufacture, are subject to an insidious disease (necrosis) which frequently proves fatal. Fortunately all risks whatever may be avoided by the use of amorphous phosphorus, which is an efficient substitute, and entirely innocuous.—*Safety-matches* were invented in Sweden in 1855, and are now extensively used. In the safety-match the composition is divided between the match and the friction paper attached to the box, so that the match can be lighted in ordinary circumstances only by being rubbed on the prepared paper. The compound put on the match consists of chlorate and bichromate of potash, red-lead, and sulphide of antimony, while the friction paper is coated with a mixture of amorphous phosphorus and sulphide of antimony.—*Vestas* are a kind of matches made of a wick of fine cotton threads coated with stearine and paraffin, smoothed and rounded by being drawn through a metal plate pierced with circular holes of the desired size; the wick is then cut into vesta lengths, which are tipped with the ordinary igniting composition.—*Fusees* are made of a thick spongy paper soaked in a solution of niter and bichromate of potash, and tipped with the usual ingredients.—*Vesuvians* are round matches of wood having a large head at each end made of a mixture of charcoal, niter, etc., and tipped with the ordinary igniting composition.

Matchlock (mach′lok), an old form of musket fired by means of a match. They were invented in the first half of the fifteenth century, and were succeeded by the arquebus. See *Musquet*.

Mate (māt), an officer in a merchantship, or ship-of-war, whose duty is to assist the master or commander, and to take, in his absence, the command. There is sometimes only one, and sometimes two, three, or four mates in a mer-



MATCH MAKING MACHINE

The match sticks are prepared, dipped in the ignition composition and dried by this machine. The matches are removed and packed in boxes by automatic machinery so that manual labor is practically eliminated in the manufacture.

chantman, according to her size, denominated *first*, *second*, *third*, etc., mates. The law of the United States recognizes only two descriptions of persons in a merchantman—the master and mariners, the mates being included in the latter, and the captain being responsible for their proceedings. In the British navy the term is limited to the assistants of certain warrant officers, as boatswain's mate, gunner's mate, etc.

Maté (mä'tā), the plant that yields Paraguay tea, the *Ilex Paraguayensis*, a kind of holly, nat. order Aquifoliaceæ. It has smooth, ovate-lanceolate, unequally serrated leaves, much-branched racemes of flowers, the subdivisions of which are somewhat unbellate. In Brazil and other parts of South America the leaves are extensively used as a substitute for tea, the name *Maté* having been transferred to the plant from the gourd or calabash in which the leaves are infused. Boiling water is poured upon the powdered leaves, then a lump of burned sugar and sometimes a few drops of lemon juice are added. Usually the infusion is sucked through a tube, sometimes of silver, having a perforated bulb to act as a strainer at the lower end. It contains theine, and acts as a slight aperient and diuretic.

Matera (mȧ-tā'rȧ), a town of South Italy, province of Potenza. It is the residence of an archbishop, and has a cathedral and three convents. Pop. 17,801.

Materialism (mȧ-tē'ri-al-izm), in philosophy, that system which denies the existence of a spiritual or immaterial principal in man, called the mind or soul, distinct from matter; or in a more extended sense, the doctrine that is founded on the hypothesis that all existence (including, of course, the conscious subject) may be resolved into a modification of matter.

Materia Medica (mȧ-tē'ri-a med'i-ka), the collective name given to the materials with which physicians attempt to cure or alleviate the numerous diseases of the human body, and which comprehend a great variety of substances taken from the mineral, animal and vegetable kingdoms—such as mercury, antimony, arsenic, and zinc, from among the metallic bodies; sulphur, lime, soda, niter, magnesia, borax and several salts, from among the other minerals; and some 200 substances belonging to the animal and vegetable kingdoms.

Mathematics (math-e-mat'iks) is the science in which known relations between magnitudes are subjected to certain processes which enable other relations to be deduced. Mathematical principles which are deduced from axioms with the help of certain definitions belong to *pure* mathematics, and those which have been deduced with the help of pure mathematics from certain simple physical laws, belong to *mixed* mathematics. Arithmetic, geometry, algebra, plane and spherical trigonometry, analytical or coördinate geometry, the differential and integral calculus, quaternions, the calculus of finite differences, etc., are departments of pure mathematics; the dynamics of rigid bodies and the application of its principles in astronomy and in investigating the actions of forces on ordinary matter, acoustics, the undulatory theory of light, optics, thermodynamics, electricity and magnetism, etc., are departments of mixed mathematics. See *Algebra*, *Arithmetic*, *Dynamics*, *Geometry*, etc.

Mather (math'ėr), Cotton, colonial author, the eldest son of Increase Mather, was born at Boston in 1663. He was graduated at Harvard College in 1678; and in 1684 was ordained minister in Boston, as colleague of his father. He strove to maintain the ascendency which had formerly belonged to the New England clergy in civil affairs, but which was then on the decline. In 1685 he published his *Memorable Providences relating to Witchcraft and Possessions*, which was used as an authority in the persecution and condemnation of nineteen victims burned for witchcraft at Salem in 1692. He died in 1728, with the reputation of having been the greatest scholar and author that America had then produced, his publications, some of huge dimensions, amounting to 382. Credulity, pedantry, quaintness, eccentricity, are blended in most of his works with great erudition. His largest and most celebrated work is his *Magnalia Christi Americana*, or the *Ecclesiastical History of New England* from 1625 to 1698. His life was written by his son and successor, Samuel Mather, also a learned divine and author.

Mather, Increase, one of the early presidents of Harvard College, was born at Dorchester, Massachusetts, in 1639; was graduated at Harvard in 1656; was ordained a minister in 1661; president of Harvard College from 1685 to 1701. When King Charles II signified his wish that the charter of Massachusetts should be resigned into his hands, in 1682, Dr. Mather contended against a compliance. In 1689 he was deputed to England, as agent of the province, to procure redress for grievances.

He held conferences with King James II, and with William and Mary, and in 1692 returned to Boston with a new charter from the crown, settling the government of the province. He died at Boston in 1723. His publications were 92 in number, of which his essay for the recording of *Illustrious Providences* (1684) is one of the chief. His book to prove that the devil might appear in the shape of an innocent man, enabled many convicted of witchcraft to escape death.

Mathew (math'ū), THEOBALD, popularly known as *Father Mathew*, Irish apostle of temperance, was born in 1790, studied at Maynooth, and was ordained a priest in 1814. Shortly afterwards he was appointed to a missionary charge at Cork, and established a society, on the model of those of St. Vincent de Paul, for visiting the sick and distressed. A more extended undertaking was the celebrated temperance crusade, which was so successful that in a few months he had 150,000 converts in county Cork alone. A similar success attended his work in many Irish and English towns, and in recognition of this a civil list pension of £300 was bestowed on him. He died in 1856.

Mathews (math'ūz), CHARLES, an eminent English comedian, born at London in 1776, son of a bookseller. He made his debut at Richmond in 1793, and after ten years' acting in the provinces made his first appearance in London at the Haymarket Theater in 1803. After playing with success at the Drury Lane, Lyceum, Haymarket, Covent Garden, and various provincial theaters, he instituted, in 1818, a species of entertainment in the form of a monologue, which, under the title of *Mathews at Home*, for five successive seasons drew crowded audiences to the English Opera House. In 1822 he played in America, and on his return in 1823 produced his *Trip to America*, which was as favorably received as his *At Home*. He continued both entertainments for upwards of ten years, appearing at intervals in the regular drama. In 1834 he was again enthusiastically received in America, but was taken ill on the return voyage, and died at Plymouth in 1835. His powers of mimicry have perhaps never been surpassed on the stage, while his personal qualities won him the friendship of Coleridge, Lamb, and many other eminent men.—His son CHARLES JAMES (born in 1803; died in 1878) long held a prominent place as a light comedian. Originally intended for an architect, his strong dramatic instinct led him to abandon that profession, and he made his first appearance on the stage at the Adelphi, London, in 1835. His first wife was Madame Vestris, the celebrated actress. In his sixty-sixth year he made a tour of the world, gaining everywhere great applause for the grace and finish and exquisite humor of his acting.

Mathura (mat-hu̱-rä'). See *Muttra*.

Matlock (mat'lok), a town of England, in Derbyshire, on the Derwent, 17 miles northwest of Derby, with lead mines which employ a number of the inhabitants. Pop. (1911) 6746.—The village of Matlock-Bath, about a mile and a half distant, is a much-frequented watering-place, its medicinal springs being efficacious in bilious and rheumatic cases, gout, incipient consumption, etc.

Matricaria (ma-tri-kā'ri-a), a genus of plants of the nat. order Compositæ. See *Chamomile*.

Matrix (ma'triks), in mining and geology, the rock or main substance in which any accidental crystal, mineral, or fossil is embedded.

Matsys (mat'sis), METSYS, or MASSYS, QUENTIN, a Flemish painter who was originally a blacksmith, born at Louvain in 1466. It is said he quitted the forge for the pencil in consequence of having become enamored of the daughter of a painter, whose hand was to be obtained only by a master of the same profession. He quitted his native city in 1491 and went to Antwerp, when he was made a master of the famous guild of painters of that city. He chiefly painted portraits and half-figures in common life, but sometimes undertook great works, of which a *Descent from the Cross*, in the cathedral of Antwerp, is a favorable specimen, also his picture of the *Two Misers*. He died in 1529.

Matteawan (mat-tē-a-won'), a village of Dutchess county, New York, on Fishkill Creek, near the Hudson River and 3 miles E. of Newburgh. It has abundant water power and manufactures of hats, silk, machinery, air-brakes, etc. Here is the State Hospital for the Criminal Insane. Pop. 6727.

Matter (mat'ėr), that which occupies space, and through which force is manifested. It is also that which makes itself known to us by our bodily senses, though there is believed to exist one kind of matter at least which is too subtle to be perceived by the senses, namely, the intermolecular and interstellar ether, the light-conveying element. Roughly speaking, matter exists in one of three states, solid, liquid, or gaseous, but these are not marked off by any distinct

line. It is believed to consist of minute particles termed atoms, which collect into small aggregates known as molecules, these being the basic elements of the chemical bodies and of all material masses. Matter is commonly regarded as the antithesis of mind.

Matterhorn. See *Cervin.*

Matthew (math′ū), St., evangelist and apostle, son of Alpheus; previous to his call a publican or officer of the Roman customs, and, according to tradition, a native of Nazareth. After the ascension of Christ we find him at Jerusalem with the other apostles, but this is the last notice of him in Scripture. Tradition represents him as preaching fifteen years in Jerusalem, then visiting the Ethiopians, Macedonians, Persians, Syrians, etc., and finally suffering martyrdom in Persia. His gospel has been supposed by some critics to have been originally written in Hebrew, or rather Aramaic, but it is only found in Greek. The chief aim of this Gospel is evidently to prove the Messianic character of Jesus. See *Gospel.*

Matthew of Westminster, an old English chronicler, a Benedictine monk of the Abbey of Westminster, who lived in the fourteenth century. His chronicle, extending from the creation to 1307, was entitled by him *Flores Historiarum* ('Flowers of Histories'), whence his name of *Florilegus.* The work is very freely transcribed from Matthew Paris.

Matthias Corvinus (ma-thī′as cor′-vē-nus), King of Hungary, second son of John Hunniades. The enemies of his father kept him imprisoned in Bohemia, but in 1458, at the age of sixteen years, he was called to the throne of Hungary. He maintained his position against Frederick III, repelled the invading Turks, and between 1468 and 1478, conquered Silesia, Moravia and Lusatia; he was also victorious over the Poles, and took the greater part of Austria, including Vienna, from Frederick, and held all his extensive conquests till his death. He encouraged science and scholarship, and collected a great library (afterwards destroyed by the Turks) at Buda. He died in 1490.

Matto-Grosso (mät′to-grōs′so; Great Forest), the most western and second largest province of Brazil, bordering on Paraguay and Bolivia; area, 532,445 square miles. The dense forests which cover a great part of the surface abound with inexhaustible supplies of the finest timber, and yield valuable gums, balsams and medicinal plants. Gold, diamonds and other gems are obtained. Little of the soil is as yet under cultivation. Pop. (exclusive of Indians) 118,025.—The city of Matto-Grosso, formerly the capital of this province and of much importance in connection with the gold diggings, has dwindled in population from 20,000 to 1000.

Mattoon (mat-tön′), a city of Coles county, Illinois, 12 miles S. E. of Peoria, on the Illinois Central and other railroads. It has large grain elevators, railroad repair shops and foundries, machine shops, broom factories, flour mills, wagon and carriage works, tile factories, etc. It is central to the great broomcorn belt of central Illinois. Pop. 11,456.

Mauch Chunk (mąk′ chunk′), a borough of Pennsylvania, capital of Carbon county, on the W. bank of Lehigh River, 89 miles N. W. of Philadelphia. It is picturesquely situated in a narrow valley or ravine between steep hills, which contain an abundance of anthracite coal. A railway called the Switchback ascends the hills and affords fine views of the scenery, attracting many visitors during the summer. It is an important point for the shipment of coal from numerous large collieries, and has ironworks and foundries, silk and woodworking mills. Pop. 3952.

Maulmain. See *Moulmein.*

Mauna Loa (mou′nä lō′ä), a celebrated volcano near the center of Hawaii; height 13,675 feet; and distinguished for the immense quantities of lava thrown out and the size of its crater, 12,500 feet diameter.—Mauna Kea, an active volcano of Hawaii, is the highest peak in the Pacific Ocean, rising 13,805 feet.

Maund (mąnd), an East Indian weight varying greatly in different places. In Bengal it is 80 pounds, in Bombay 28, and in Madras 25.

Maundy-Thursday (mąn′di), the Thursday in the Passion week. It used to be the custom in England and other countries, and still is in Austria, for the sovereign to wash the feet of a certain number of poor persons, and make them presents on this day; and in Rome the pope washes the feet of some of the bishops. The ceremony commemorates Christ's washing of the apostles' feet.

Maupertuis (mō-per-twē), Pierre Louis Moreau de, a French mathematician and philosopher, born at St. Malo in 1698. After four

years' service in the army, he was in 1723 received into the Academy of Sciences. He then visited England and Switzerland, and became a pupil of Newton. In 1736 he conducted a scientific expedition to Lapland for the purpose of measuring an arc of the meridian. In 1740 he accepted an invitation from the King of Prussia to settle at Berlin, where, in 1746, he was declared president of the Academy of Sciences. He died at Basel in 1759.

Maura, SANTA. See *Leucadia.*

Maurepas (mōr-pä), JEAN FRÉDÉRIC PHÉLIPPEAUX, COUNT DE, a French statesman, born in 1701. At the age of twenty-three years he became minister (by inheritance) of the French marine. An epigram on Madame de Pompadour led to his banishment from the court in 1749, but Louis XVI recalled him in 1774, and placed him at the head of his ministry, and he retained the confidence of the king till his death, in 1781. The restoration of the parliaments was the principal measure of his later ministry.

Maurice, OF SAXONY, COUNT. See *Saxe.*

Maurice (mą'ris), JOHN FREDERICK DENISON, an Anglican divine and prominent leader of the Broad Church party, son of a Unitarian minister, was born in 1805, at Normanston, Suffolk. In 1823 he entered Trinity College, Cambridge, where he declined a fellowship on the ground that he could not sign the Thirty-nine Articles. In 1828 he settled in London, and applied himself to literature, his first work of any extent being *Eustace Conyers*, a novel (1834). He also contributed, along with John Sterling, to the *Athenæum*, then recently started. A change in his religious sentiments, however, induced him to become a clergyman of the Church of England (1835), and in 1836 he was appointed chaplain to Guy's Hospital, a post which he kept for ten years. In 1840 he became professor of modern history and English literature in King's College, London, and in 1846 professor of ecclesiastical history, but in 1853 the publication by him of an essay on future punishment, necessitated his resignation of both chairs. In 1854 he founded the first workingman's college in London, of which he became principal. In 1860 he was appointed perpetual curate of St. Peter's, Vere Street, Cavendish Square, and in 1866 professor of moral philosophy at Cambridge, a position which he held until his death in 1872. Besides the books above mentioned, he published several volumes of sermons, and treatises on various subjects.

Maurice of Nassau, Prince of Orange, stadtholder of the Netherlands, the youngest son of William the Silent, was born in 1567. He was elected stadtholder of the provinces of Zeeland and Holland on the assassination of his father in 1585, and subsequently of Utrecht, Overyssel and Gelderland; and as commander of the army of the Netherlands he carried on war against the Spaniards with extraordinary success, driving them entirely out of the United Provinces. Previous to the truce of twelve years, concluded in 1609, when Spain was compelled to acknowledge the United Provinces as a free republic, about forty towns and several fortresses had fallen into his hands. He had defeated the Spaniards in three pitched battles, besides the naval victories which were gained by the vice-admirals of the republic on the coasts of Spain and Flanders. In 1621 the war with Spain was renewed, but the superior force under Spinola compelled Maurice to act upon the defensive only. He died at The Hague in 1625, and was succeeded by his brother Frederick Henry.

Mauricius (mą-rish'i-us), FLAVIUS TIBERIUS, one of the greatest Byzantine emperors, was born about 539 A.D. He distinguished himself in war against the Persians, obtaining, by his complete victory over them in 581, the honor of a triumph at Constantinople. On the death of the Emperor Tiberius, whose daughter he had married, he ascended the throne (582). The war with the Persians continued with varying success, but was brought to a close in 591 by the appeal of the Persian king, Chosroes, to the Byzantines for aid against a rebel general. A defeat of the Byzantines by the Avars, and the massacre of the Byzantine prisoners, whom Mauricius declined to ransom, led to a revolt of his troops on the Danube. They marched on Constantinople under Phocas, who was proclaimed emperor (602), and Mauricius was seized and executed in 603.

Mauritania, or MAURETANIA (mą-ri-tan'i-a), the ancient name of the northwestern portion of Africa, corresponding in its area to the present Morocco and the western part of Algeria. The ancient boundary of Mauritania on the south was the Atlas. In A.D. 40 it became a Roman province. From 429 to 534 A.D. it was held by the Vandals, and in 650 A.D. it was conquered by the Arabs.

Mauritia (mą-rish'i-a), or BURITI PALM, (*Mauritia viniféra*), called also the Brazilian wine palm, one of the tallest of the palms, rising to a height of 100-150 feet with a diameter of only 2 feet, and bearing an imposing crown of immense fan-shaped leaves with long foot-stalks. It grows in marshy spots. From the juice of the stem and of the fruit a sweet vinous liquor is prepared. The fruit is of the size of a hen's egg. To the same genus belongs the fan-palm of the Orinoco (*M. flexuosa*), which furnishes the Guarani Indians of the Orinoco region with all the necessaries of life.

Mauritius (mą-rish'i-us), or ISLE OF FRANCE, an island in the Indian Ocean, a colony of Great Britain, 400 miles east from the island of Madagascar. It is of an oval form, about 40 miles long from northeast to southwest, and 25 miles in breadth, and is surrounded by coral reefs. It is composed chiefly of rugged and irregular mountains, the highest, the Montagne de la Rivière Noire, 2700 feet, and the isolated rock Peter Botte, 2600 feet. Between the mountains, however, and along the coast, there are large and fertile plains and valleys, having a rich soil of black vegetable mold or stiff clay. The climate is pleasant during the cool season, but oppressively hot in summer, and the island is occasionally visited by severe epidemics. In its vegetation Mauritius resembles the Cape in the number of succulent plants, cactuses, spurges, and aloes. The principal objects of cultivation are sugar, rice, maize, cotton, coffee, manioc and vegetables. The exports include sugar (much the largest), rum, vanilla, aloe fiber, cocoanut oil. The imports consist of rice, wheat, cattle, cotton goods, haberdashery, hardware, etc. The government is vested in a lieutenant-governor and legislative council. The island has two railways crossing it, in all 87 miles. Mauritius was discovered in 1505 by the Portuguese. The Dutch took possession of it in 1598, and named it after Prince Maurice. After occupation by the French it was captured by Britain in 1810. Principal towns, Port Louis and Mahébourg. Pop. 371,023, two-thirds of whom were originally coolies or their descendants imported to work the sugar estates. French is the language chiefly spoken.

Maury (mą'ri), MATTHEW FONTAINE, naval officer and hydrographer, was born in Virginia, in 1806, and entered the United States navy in 1825. In 1839 he was lamed by an accident, and quitted active service afloat for scientific work at the Washington Observatory. He wrote valuable papers on the Gulf Stream, ocean currents, great circle sailing, etc., and his *Physical Geography of the Sea*, published in 1856, gave him a wide reputation. In 1861 he resigned his appointment at the Washington Observatory and entered the Confederate service, in which he obtained the rank of commodore. He died in 1873.

Mauser Rifle (mą'sėr), a breech-loading rifle named after its inventor. It is 6 lbs. lighter than the Springfield and has a smaller bore. See *Rifle*.

Mausoleum (mą-sō'li-um; Greek, *mausoleion*), a sepulchral monument, so named from Mausōlus, a king of Caria, to whom his wife Artemisia erected a monument which became so famous as to be esteemed the seventh wonder of the world, and to give a generic name to all superb sepulchers. From Pliny we learn that its height was 140 feet. In modern times the term is applied generally to a sepulchral edifice erected for the reception of a monument, or to contain tombs.

Mauvaises Terres (mō-vāz tār; 'bad lands'), the name given to desolate tracts of land in various parts of the North-central United States; more especially to a barren region in Dakota along the White River, an affluent of the Missouri. Here the elevated clayey ground has been eroded by the rains until it presents many curious effects, resembling those of ruined architecture.

Mauve (mąv), a beautiful purple dye obtained from aniline, used for dyeing silks, etc. In silk and wool the colors are permanent without the use of mordants.

Maverick (mav'er-ik), the name given in the cattle ranges of the Western United States to unbranded animals, which the finder often brands for himself or his employer:—hence, something dishonestly appropriated. On these ranges the cattle of different owners herd together and must be branded to prove ownership. If a calf strays away from its mother before being branded, it may be illegally branded, and thus become a maverick. The name is also applied to the unbranded animals driven in at the general round-up and equitably divided among the owners. The word came from Samuel Maverick, a Texan cattleman, who distinguished his animals by leaving them unbranded, and when they became mixed with other herds claimed all unbranded animals as 'mavericks.'

Mavis. See *Thrush.*

Mavrocordato (m a v-ro-kor-da'to), ALEXANDER, PRINCE, a Greek politician and diplomatist, born at Constantinople in 1791; died in 1865. He took part in the Greek movement for freedom (1821); prepared the declaration of independence; became president of the Executive Council; and successfully defended Missolonghi (1822). When Otho was placed on the Greek throne by the European powers Mavrocordato became his financial minister, and he was afterwards ambassador to Munich, London and Berlin. During the insurrection of 1843-44 he was president of the Constitutional Assembly, and at the outbreak of the Crimean war he became head of the Greek government.

Maxentius (maks-en'shi-us), M. AURELIUS VALERIUS, a Roman emperor, 306-312 A.D., son of Maximianus, and son-in-law of Galerius, whom he deposed. He reigned along with his father for a short time; was defeated by Constantine in 312, and in the retreat was drowned in the Tiber.

Maxilla (maks'il-a; Latin, *maxilla*, a jaw), the term applied in comparative anatomy to the upper jawbones of Vertebrates, in contradistinction to the mandible or lower jaw; and in Invertebrata to the second or lesser pair or pairs of jaws. Thus in insects, spiders, crustaceans, etc., the maxillæ form definite and important organs in the trituration and division of food.

Maxim (maks'im), HIRAM STEVENS, inventor, born at Sangerville, Maine, in 1840. He worked as coach builder and engineer and took out patents for various inventions, chief among them being the Maxim machine gun, in which the force of the recoil is used for reloading. He also invented cordite, a smokeless powder, and was one of the first to experiment with flying machines. He lived in England after 1888.

Maximianus (m a k s - i m - i-ā'nus), MARCUS AURELIUS VALERIUS HERCULIUS, a Roman emperor, who became colleague of Diocletian in the empire in 286 A.D. He endeavored to murder his rival Constantine, to whom he had given his daughter Faustina in marriage, and being frustrated by the fidelity of the latter, strangled himself 310. He was the father and contemporary of Maxentius.

Maximilian I (m a k s - i - m il'yan), E m p e r o r of Germany, son of the Emperor Frederick III and of Eleonora of Portugal, was born in 1459; in 1486 was elected king of the Romans, and emperor in 1493. He first became an independent prince by his marriage with Mary of Burgundy, the daughter of Charles the Bold, who was killed in

Maximilian I.

1477. This match involved him in a war with Louis XI, king of France, in which he was successful, though he was defeated at a later period by the Milanese. He died in 1519, and was succeeded by his grandson, Charles V. See *Germany.*

Maximilian II, Emperor of G e r m a n y, b o r n in 1527; died in 1576. He succeeded his father, Ferdinand I, in 1564; was tolerant of the Reformation, but did not join the Protestant church.

Maximilian, Emperor of M e x i c o, known in his earlier life as FERDINAND MAXIMILIAN JOSEPH, Archduke of Austria, born at Vienna in 1832, was the younger brother of Francis Joseph I of Austria. In 1863 he was induced by the Emperor Napoleon III, and also by a deputation of Mexican notables, to accept the throne of Mexico. With this intention he entered Mexico in June, 1864. Maximilian was at first extremely popular; yet he failed to conciliate either the church party or the republicans, and the latter, under Juarez, rose in revolt. Having become involved in financial and political difficulties, Maximilian, with the approval of Napoleon, resolved to abdicate (1866), and he had proceeded to Orizaba when he was induced to return by the Conservative party in the state. The fighting which followed culminated in the capture and execution of the emperor and two of his chief generals, June 19, 1867.

Maximilian Joseph, King of B a v a r i a, born in 1756; died in 1825. He married his daughter to Eugene Beauharnais, son of Napoleon's wife Josephine, and had his

duchy raised to a kingdom in 1806. In 1813 he joined the league against France.

Maximinus (mak-si-mī'nus), CAIUS JULIUS VERUS, a Roman emperor, the son of a peasant of Thrace. He entered the Roman army under Septimus Severus before 210, and gradually rose in rank until, on the death of Alexander Severus, he caused himself to be proclaimed emperor, A.D. 235. He was successful in his German campaigns, but his acts of barbarity and tyranny provoked an insurrection, in the attempt to quell which he was assassinated by his own soldiery, in A.D. 238. He is represented as being of immense stature and strength.

Maximum (mak'si-mum), the greatest quantity or degree fixed, attainable, or attained, in any given case as opposed to *minimum*, the smallest. In mathematics and physics maximum is used also for the value which a varying quantity has at the moment when it ceases to increase and begins to decrease.

Maxwell (maks'wel), JAMES CLERK, born at Kirkcudbright in 1831; died in 1879. He was educated at Edinburgh and Trinity College, Cambridge, where in 1854 he was second wrangler. He held the professorship of natural philosophy in Marischal College, Aberdeen, in 1856-60; afterwards the chair of physics and astronomy in King's College, London, 1860-68, and the professorship of physics in Cambridge from 1871 until his death. He published treatises on *Electricity and Magnetism*, *The Theory of Heat*, *Matter and Motion*, etc., and won high esteem among scientists for his powers of deduction and mathematical analysis.

May (mā), the fifth month in the year, but third in the old Roman calendar, has thirty-one days. The Romans regarded it as unlucky to contract marriages during its course—a superstition still prevalent in some parts of Europe. On the first of May the old Celtic peoples held a festival called Beltane (see *Beltane*). In former days outdoor sports and pastimes on the first of May were very common, and are not yet entirely given up. They included the erection of a *May-pole* decorated with flowers and foliage, round which young men and maidens danced, one of the latter being chosen for her good looks as queen of the festival, or 'Queen of the May.'

May, SAMUEL, REVEREND, abolitionist, born at Boston, Massachusetts, in 1810; died in 1899. He was graduated at Harvard in 1829; was pastor of a Unitarian church, 1834-46; was general agent of the Massachusetts Anti-Slavery Society, 1847-61; also of the American Anti-Slavery Society. He was a regular contributor to the *Liberator* and other anti-slavery literature.

May, THOMAS ERSKINE, born in 1815; died in 1886. He became assistant librarian to the House of Commons in 1831, and held other positions. He was the author of *A Treatise on the Law, Privileges, Proceedings, and Usage of Parliament* (1844); *The Constitutional History of England since the Accession of George III* (1760-1860); and a history of *Democracy in Europe* (1877). He was subsequently created Baron Farnborough.

Mayaguez (mä-yä'gwes), a seaport town on the west coast of the West Indian island of Porto Rico. Pop. 16,563.

May-apple, a plant, *Podophyllum peltātum*, nat. order Berberidaceæ (barberries). It is a native of North America, and its creeping rootstalk affords an active cathartic medicine known as *podophyllin*. The yellowish pulpy fruit, of the size of a pigeon's egg, is slightly acid, and is sometimes eaten.

May-apple (*Podophyllum peltatum*).

Mayas (mī'az), a race of Indians inhabiting Yucatan and the adjacent regions of Mexico and Central America, believed to be the descendants of those who built the great ruined cities of these parts.

Maybole (mā'bōl), a police burgh of Ayrshire, Scotland, 49 miles S. S. W. by rail from Glasgow. It contains an old castle, at one time the town residence of the Ailsa family. Shoemaking is the chief industry. Pop. 5892.

Mayence (mä-yäns). See *Mainz*.

Mayenne (mä-yen), a department of northwestern France, named from the small river Mayenne, which joins with the Sarthe to form the Maine; area, 1996 square miles. The surface is rather hilly or broken, but the soil is good and yields corn, flax, hemp, apples, etc. Coal and slate are obtained in small quantities. Laval is the capital. Pop. (1906) 305,457.

Mayenne, a town of France, in the above department, on a river of same name, 17 miles N. N. E. of

Laval. Its principal edifices are two churches, a town house and a picturesque old castle. Pop. 10,020.

Mayfield, a city, capital of Graves Co., Kentucky, 36 miles s. of Paducah. It has woolen and flour mills and is in a tobacco and grain region. Pop. 5916.

May-fly. See *Ephemera.*

Mayhew (mā'hū), HENRY, born at London in 1812; died in 1887. He was educated at Westminster school; made a voyage to Calcutta on a ship of war; returned and entered the law office of his father; joined the literary profession as author of the farce, *The Wandering Minstrel;* and started a comic paper called *Figaro in London* which was succeeded by *Punch* (1841), of which he was one of the promoters. He was a versatile writer of tales, farces, and humorous fictions, but his best known work is *London Labor* and the *London Poor.*—His brother, HORACE (1819-72), was on the *Punch* staff, and published several humorous works. Three other brothers, Thomas, Edward and Augustus, were actively engaged in the literature of their day.

Maynard (mā'nard), EDWARD, inventor, born at Madison, New Jersey, in 1813; died in 1891. He became a dentist and was the inventor of many surgical instruments; but is best known for his breech-loading rifle, patented in 1851, and the forerunner of the modern improved rifle.

Maynard, a town (township) in Middlesex Co., Massachusetts, containing a manufacturing village of same name, 10 miles S. E. of Marlboro. It has large woolen and powder mills. Pop. of town 6390.

Maynooth (mā'nöth), a market town of Kildare, Ireland, 13 miles W. N. W. of Dublin. It has a Protestant and a Roman Catholic church, and the well-known college of St. Patrick (see next article). Pop. about 1400.

Maynooth College, or ST. PATRICK'S COLLEGE, the chief college of the Catholic University of Ireland, was founded in 1795 by an act of the Irish parliament, for the education of the Irish Roman Catholic clergy. The annual vote from the British parliament for its maintenance was changed in 1845 to a permanent endowment of £26,000, and a sum of £30,000 for new buildings granted, while this again was commuted by the Irish Church Act (1869) for a lump sum of £372,276. All the students are destined for the priesthood, and all are resident within the building. The college buildings consist of an old and a new quadrangle, the latter a fine Gothic structure.

Mayo (mā'yō), a western maritime county of Ireland, in Connaught; area, 2157 sq. miles. The county is in many parts extremely mountainous, its highest summit reaching 2680 feet. The principal river is the Moy, and the largest lakes are Conn and Mask, the latter only partly in the county. Iron ore abounds, but remains unwrought; there are several valuable slate quarries. Oats form the chief crop; and barley, bere, rye, potatoes and turnips are grown; but pasturage is more attended to than tillage, only a small part of the soil being arable. The fisheries are productive. Principal towns, Castlebar (the county town), Ballina and Westport. Pop. 199,166.

Mayo, RICHARD SOUTHWELL BOURKE, SIXTH EARL OF, born in 1822; educated at Trinity College, Dublin; traveled in Russia and published the result in a work on St. Petersburg and Moscow (1845). He entered parliament in 1847 under the title of Viscount Naas, and was made chief secretary for Ireland under the Derby administrations (1852-68). He succeeded to the earldom in 1867, and was appointed viceroy of India by Mr. Disraeli in 1868. After a successful career in this capacity, he was assassinated at Port Blair in the Andamans by a Mohammedan convict in 1872.

Mayor (mā'ur), the chief magistrate of a city or corporate town in the United States and the British islands and colonies; in Scotland called *provost.* In the United States the mayor is elected by the qualified voters of the city or town for a certain term of years. The power and authority which mayors possess, being given to them by local regulations, vary in different places. The Mayors of London, York and Dublin are each called 'lord mayor'; the Lord Mayor of London having the further title of 'right honorable,' first allowed in 1354 by Edward III.

Mayotte, or MAYOTTA (mä-yot'ta), an island in the Indian Ocean, one of the Comoros, at the northeast entrance of the Mozambique Channel, and a French colony. It is about 30 miles long by 20 miles broad, and some of its volcanic peaks are nearly 2000 ft. high. Pop. 11,640.

Maysville (māz'vil), capital of Mason Co., Kentucky, on the Ohio River, 65 miles above Cincinnati. It is an important shipping point for tobacco and wheat, and has varied manu-

factures, including cotton, shoes, cigars, pulleys, etc. Pop. 6141.

May-weed, a European plant (*Anthĕmis Cotula*), nat. order Compositæ. It is a troublesome weed in corn, and difficult to eradicate. It has daisy-like flowers, finely divided leaves, and an unpleasant smell, and sometimes blisters the hands of reapers.

Maywood, a village of Cook Co., Illinois, 10 miles W. of Chicago. It has steel works. Pop. 8033.

Mazamet (mȧ-zȧ-mā), a town of France, department of Tarn, on the Arnette, 32 miles S. S. E. Alby. It has manufactures of coarse woolens, flannels and moleskins. Pop. (1906) 11,370.

Mazanderan (mä-zan-der-än′), or MAZENDERAN, a province of Persia, bounded on the north by the Caspian. Along the Caspian Sea the land is flat and fertile, but southward it rises rapidly into the spurs of the Elbruz Mountains. Sugar-cane, rice, cotton and mulberry trees grow luxuriantly. The capital is Sari, and the population of the province is estimated at 300,000.

Mazarin (mȧ-zȧ-raṇ), JULES, or GIULIO MAZARINI, first minister of Louis XIV and cardinal, an Italian by origin, born in 1602; died in 1661. He was educated at Rome by the Jesuits, thence proceeded to the University of Alcala in Spain; entered the pope's military service, and distinguished himself by diplomatic ability, for which he was rewarded with two canonries, and the appointment of nuncio to the court of France (1634-36). Here he gained the favor of Richelieu; accepted service from the king, and became a naturalized citizen of France; was made a cardinal in recognition of his diplomatic services in Savoy; and in 1642, when Richelieu died, promptly succeeded him. On the death of Louis XIII the queen, Anne of Austria, became regent for her young son, Louis XIV, and it was thought that Mazarin would be dismissed; but instead he gained over the queen-regent, and made himself master of the nation. Two parties in the state rebelled against this usurpation of supreme power by the cardinal. The parliament of Paris denounced his increasing taxation, while the nobility dreaded his supremacy, and the combination of these malcontents resulted in the civil war of the Fronde (which see). As the immediate result of the conflict, Mazarin had to go into exile, but through means of intrigue he formed a powerful royal party in the state, gained General Turenne to his cause, and finally returned to his position at court in 1653. During the succeeding eight years he remained all-powerful in France; pursued the policy of Richelieu in foreign affairs; made an alliance with Cromwell; brought the Rhine provinces under the headship of France, and in the treaty of the Pyrenees humiliated Spain, and gained much of French Flanders. Just as his foreign policy was successful, so was his home policy disastrous. He did nothing for the people but increase their taxes to fill an impoverished exchequer. Yet when he died Mazarin left an enormous fortune to his nieces, whom he had married into the most powerful families of Italy and France.

Mazarine Bible, an edition of the Latin Vulgate discovered in the library of Cardinal Mazarin. It was from this that John Guttenberg (1450-55) printed the first book in which metal types were used.

Mazarrón (mȧ-thȧr-rōn′), a town of Southern Spain, province Murcia, near the Mediterranean Sea, on which it has a harbor. It has mines of iron and argentiferous land. Pop. 23,284.

Mazatlán (mä-sat-län′), a seaport in Mexico, in the state of Sinaloa, at the entrance into the Gulf of California. It forms the outlet for the gold and silver of the neighboring mines, and imports considerable quantities of English goods. Pop. 17,852.

Mazeppa (mȧ-zep′ȧ), JOHN, Hetman of the Cossacks, born about 1645. He became page to the king of Poland, and being detected in an intrigue with a Polish lady of high rank, Mazeppa was bound naked upon an untamed horse by her husband, and cast loose. He was found and released by some peasants, and afterwards joined the Cossacks, where his skill, sagacity and strength procured him the position of hetman in 1687. He gained the confidence of Peter the Great, who made him prince of the Ukraine; but having entered into a treasonable intrigue with Charles XII he suffered defeat with the Swedish monarch at Pultawa, fled to Bender, and there died in 1709. He is the hero of a poem by Lord Byron, and a drama by Pushkin.

Mazurka, or MAZOUR′KA (ma-zör′-ka), a lively Polish round dance in ⅜ or ¾ time and generally danced by four or eight pairs. It is quicker than the polonaise. The name is also applied to the music.

Mazzara (mȧt-sä′rȧ), a seaport and cathedral town of Sicily, on the south coast of the western extremity, surrounded by Moorish walls. Pop. 20,130.

Mazzarino (mȧt-sȧ-rē′nō), a town of Sicily, province Caltanissetta. Pop. 15,266.

Mazzini (mȧt-sē′nē), GIUSEPPE, an Italian patriot, born at Genoa in 1805; died at Pisa in 1872. His father was a physician and a professor in the university, and Mazzini studied with a view to follow this profession, but afterwards took a new bent and was graduated (1826) in law. While he was an advocate he turned his attention to literature, his first significant essay being *Dante's Love of Country.* As his writings grew more distinctly liberal in their politics the government suppressed the *Indicatore Genovese* and the *Indicatore Livornese*, the papers in which they appeared. He afterwards joined the Carbonari, and was imprisoned in Savona for some months. On his release (1832) he was exiled to Marseilles, but he was compelled by the French government to retire into Switzerland. During the following five years he planned and organized various unsuccessful revolutionary movements, until, in 1837, he was expelled by the Swiss authorities and sought refuge in London. During the revolutionary movements of 1848 he proceeded to Italy; served for a time under Garibaldi, and when the pope fled from Rome he became president of its short-lived republic and made a heroic defense of the capital against the French, until compelled to surrender. From that time he continued to organize various risings in Italy, and the successful Sicilian expedition of Garibaldi in 1860 was due largely to his labors. When Italian unity was accomplished under a monarchy Mazzini accepted the results with reserve. The latter part of his life was spent chiefly between London and Lugano. He was buried at Genoa.

Mazzola (mȧt-sō′lȧ), or MAZZUOLI (mȧt-sụ-ō′lē), GIROLAMO FRANCESCO MARIA (called *Il Parmigiano*, the Parmesan), a painter of the Lombard school, born at Parma in 1503; died in 1540. His earliest works were in the style of Correggio, but in his twentieth year he went to Rome, where he came under the influence of Raphael and Michael Angelo, and was patronized by Clement VII. After the sack of Rome in 1527 he went to Bologna. His paintings are numerous, both fresco and easel. He was the earliest Italian etcher, and many of his engravings yet exist.

McAlester, a city of Pittsburgh Co., Oklahoma, 60 miles S. by W. of Muskogee. Pop. 12,954.

McAll Mission, the largest Protestant mission in France, founded in 1871 by the Rev. Robert W. McAll and his wife. It now possesses more than 100 stations, about 40 of them in Paris, and is supported by Protestants of all denominations, in the United States and the British Empire. Twelve years after its foundation, it held as many as 15,000 meetings a year, attended by nearly a million people (mainly of the irreligious and neglected class), and paid 20,000 house to house visits.

McArthur, ARTHUR, soldier, born in Massachusetts in 1845; served throughout the Civil war, and entered the regular army as lieutenant after the war. He served in the Indian wars; was promoted major in 1889; served in the Spanish war in the Philippines, as general of volunteers, and was promoted brigadier-general in the regular army in 1900 and major general in 1901. Retired in 1909.

McCloskey (ma-klos′ki), JOHN, cardinal, was born in Brooklyn, New York, in 1810. In 1834 he was ordained priest and in 1844 was made coadjutor of the Diocese of New York. In 1847 he was transferred to the See of Albany; in 1864 he was made Archbishop of New York and in 1875 he was appointed cardinal-priest. He died in 1885.

McComb, a city of Pike Co., Mississippi, 100 miles N. of New Orleans. It has railroad shops, cotton mills, etc. Pop. 6237.

McCook, HENRY CHRISTOPHER, naturalist, born at New Lisbon, Ohio, in 1837. He entered the Presbyterian ministry and became pastor of a church at Philadelphia in 1869. As a naturalist, he devoted himself to the study of ants and spiders, and wrote *Mound-Making Ants. American Spiders, The Tenants of an Old Farm*, and other works. He was vice-president of the Academy of Natural Sciences and of the Entomological Society, and a brother of the 'fighting McCooks,' of whom there were seven in the Union army in the Civil war, the chief of them being General Alexander McD. McCook (1831-1903). He died in 1911.

McCormick (ma-kor′mik), CYRUS H., inventor, was born at Walnut Grove, Virginia, in 1809. In 1831 he invented the reaping-machine, which with his improvements has done so much for the cause of agriculture. He died in 1884.

McCrie (ma-krē), THOMAS, a Scottish writer and clergyman, born in 1772; died in 1835. He studied in Edinburgh University; was licensed as a preacher by the Antiburghers; and in

1795 became minister to a congregation in Edinburgh. He contributed a series of papers on the Reformation (1802-06) to the *Christian Magazine*, and in 1811 published his well-known *Life of Knox*. This was followed in 1819 by the *Life of Andrew Melville*. It is upon these two works that his fame chiefly rests, but he also wrote *The History of the Reformation in Italy* (1827) and the *History of the Reformation in Spain* (1829), besides a volume of *Sermons*, etc.

McDowell, IRVIN, soldier, born in Franklin county, Ohio, about 1818; died in 1885. He was graduated at West Point, served in the Mexican war, and as brigadier-general in the regular army, commanded the Union forces at the battle of Bull Run in 1861. He commanded a corps in the second battle of Bull Run, 1862. He was promoted major-general in 1872; retired in 1882.

McGee (mak-gē'), THOMAS D'ARCY, born at Carlingford, Ireland, in 1825; became prominent in the Young Ireland party, and had to make his escape to the United States, where he soon made a name as a journalist. His views then underwent a change; he became an ardent royalist; went to Canada, and entered parliament in 1857. In 1864 he became president of the executive council, and up till near his death took a prominent part in the measures of the day. Obnoxious to the Fenians, he was assassinated by a member of that body in 1868.

McGee, W. J., ethnologist, born in Iowa in 1853. He made extensive explorations in connection with the U. S. Geological Survey, and in 1893 was placed in charge of the Bureau of American Ethnology. Resigned to take charge of the ethnologic section of the St. Louis Exposition in 1903; director of St. Louis public museum 1905-07; on the Inland Waterways Commission since 1907. Has written much on ethnologic and other subjects.

McGill (mak-gil'), JAMES, born at Glasgow, Scotland, in 1744; died at Montreal in 1813. He emigrated to Canada, and ultimately became one of the chief merchants in Montreal. He left property valued at $150,000 (now enormously increased in value), and $50,000 cash to found the university in Montreal which bears his name.

McGill University, an institution of learning at Montreal, Canada, founded in 1821 under a bequest from James McGill (see above). It is well equipped, has a library of 150,000 volumes, a faculty of 260 instructors and students numbering nearly 2000.

McHenry, FORT, a fortification at the entrance of Baltimore harbor, which was unsuccessfully bombarded by the British fleet in 1814. It is notable from the fact that *The Star Spangled Banner* was written at this time by Francis Scott Key, an American citizen, who was detained on board a British vessel and witnessed the bombardment.

McKeesport (mak-kēz'port), a city of Allegheny Co., Pennsylvania, on the Monongahela River, 14 miles S. E. of Pittsburgh. Coal is mined near by and is the chief source of its prosperity. It has large blast furnaces, immense tube works, employing several thousand hands, railroad construction works, and large manufactures of iron, glass, etc. Natural gas is found here. Pop. 42,694.

McKees Rocks, a borough of Allegheny Co., Pennsylvania, 5 miles S. W. of Pittsburgh. Here are steel and iron works, car shops, with natural gas fuel. Coal and lumber are shipped. Pop. 14,702.

McKinley (ma-kin'lē), WILLIAM, President of the United States, was born at Niles, Ohio, in 1844. He served in the Civil war, attaining the rank of major, and was afterward attorney of Stark Co., Ohio. He twice served in the House of Representatives, being chairman of the Ways and Means Committee when the well-known tariff bill bearing his name was enacted. In 1884 and 1888 he was chairman of the Platform Committee in the Republican National Convention. He was elected Governor of Ohio in 1891, and reëlected in 1893. In 1896 he was the Republican candidate for President, and was elected, serving as the national executive through the Spanish war. In 1900 he was reelected by a largely increased majority over his former Democratic opponent, W. J. Bryan. On September 6, 1901, while attending the Pan-American Exposition at Buffalo, he was shot by an anarchist named Leon Czolgosz. After surgical treatment for the injuries caused by the two entering bullets, the President died September 14. Not only the United States, but every part of the globe mourned the loss of the genial head of the nation. Funeral services were held throughout America and Britain on the day of his interment at Canton, Ohio, September 19. By McKinley's untimely death Theodore Roosevelt became President of the United States. See *Roosevelt.*

McMaster (mak-mas'tẽr), JOHN BACH, historian, born at Brooklyn, New York, in 1853. He be-

came a civil engineer, and in 1883 was made professor of American history in the University of Pennsylvania. He is well known for his able *History of the People of the United States* (6 vols.), covering the period from the formation of the Constitution to the Civil war.

Mead (mēd), LARKIN GOLDSMITH, sculptor, born at Chesterfield, New Hampshire, in 1835. He studied the art of sculpture, and in 1862 went to Florence for study. In 1865 he exhibited several works in New York city. Prominent among his productions are the statue of Lincoln on the monument at Springfield, Illinois, the statue of Ethan Allen in the capitol at Washington, and the colossal statue of 'Vermont,' made for the statehouse at Montpelier, and several other colossal statues and groups.

Meade (mēd), GEORGE GORDON, soldier, was born in Cadiz, Spain, where his father was United States consul, in 1815. He served in the Mexican and Seminole wars. In the Civil war he was especially distinguished. In 1863, as commander of the Army of the Potomac, at Gettysburg, he checked Lee's invasion of Pennsylvania, winning one of the most important battles of the war. When Grant assumed control of the Army of the Potomac he left the command of it, as far as possible, to General Meade. He was in every battle but two fought by the Army of the Potomac. He died in 1872.

Meadow-grass (med'ō), the common name of several British grasses of the genus *Poa*. The *P. pratensis*, or smooth meadow-grass, is one of the most common of agricultural grasses.

Meadow-sweet, a well-known handsome British plant, *Spiræa Ulmaria*, nat. order Rosaceæ. It grows by the sides of streams and in damp places, has pinnate leaves, and stems two feet high bearing corymbs of white fragrant flowers. In the United States, the Roughish meadow-grass, *Poa trivialis*, is an excellent and abundant grass, both for hay and pasturage.

Meadville (mēd'vil), a city, capital of Crawford Co., Pennsylvania, 36 miles S. of Erie. The surrounding country is rich in petroleum and natural gas, and yields lumber, butter and grain. There are here extensive car works and machine shops, oil refineries, iron and boiler works and other industries. The city is the seat of Allegheny College (Methodist) and Meadville Theological College (Unitarian). Pop. 12,780.

Meagher (mā'her, or mā'er), THOMAS FRANCIS, soldier, was born in Waterford, Ireland, in 1823; died at Fort Benton, Montana, in 1867. He was a popular leader in the 'Young Ireland' party; found guilty of high treason, was sentenced to death, but transported to Van Diemen's Land. In 1861 he joined the Union army; organized the Irish Brigade, was engaged in the seven days' battles before Richmond, at Manassas and Antietam; and was wounded at Fredericksburg; served also in Tennessee and Georgia.

Measles (mē'zlz), also called RUBEOLA, an acute infectious fever, chiefly affecting children. In a period of from ten to fourteen days after contagion, symptoms of the disease begin to appear in sneezing, watering of the eyes, hoarseness, a hard cough and high temperature. On the fourth day of the fever a rash appears in blotches, crescentic in form, first upon the temples, and gradually extends over the whole surface of the body. It begins to fade about the seventh day. The complications most to be dreaded are inflammations of the mucous membranes of the eye, ear and chest. The treatment consists in keeping the patient confined to bed in a warm room, relieving the chest by hot bathing or warm packing, reducing fever and preventing constipation. During convalescence give good, nourishing food.

Measures. See *Weights* and *Measures*.

Meath (mēth), a county of Ireland, province of Leinster, abutting on the Irish Sea; area, 906 sq. miles. Its coast line of 7 miles is low and sandy; there is no good harbor; the surface is generally level; and the principal rivers are the Boyne and the Blackwater. The land is mostly laid out in grass. Some coarse linens are manufactured and there are one or two woolen factories. Principal towns, Navan and Kells. Meath contains the royal seat, 'Tara of the kings,' the scene of St. Patrick's first preaching of Christianity. Pop. 67,497.

Meaux (mō), a town of France, department Seine-et-Marne, on the Marne, 24 miles E. N. E. of Paris. It has a fine Gothic cathedral, an episcopal palace, town-house, college, diocesan seminary, etc. Pop. (1906) 11,989.

Mecca, or MEKKA (mek'ka), a city of Arabia, about 60 miles from Jidda, its port on the Red Sea, and the birthplace of Mohammed, consequently the holiest city of the Mohammedan world. It stands in a narrow, sandy valley enclosed by sterile hills, and is ill supplied with water. In its center is the Beitu-'llah ('house of God'), or El-Haram ('the inviolable')—the great mosque

enclosing the Kaaba, occupying a square dividing the upper from the lower town. The city is annually filled at the time of the Hajj or pilgrimage to the Kaaba (which see), when apartments in almost every house are hired to strangers. This pilgrimage, enjoined by Mohammed on all his followers, is the sole foundation of Mecca's fame, and the only source of its wealth and occupation. A number of the inhabitants claim to be Sherífs, or direct descendants of Mohammed, and the city is under a grand Sherif. It is dangerous for an infidel to visit Mecca, but R. F. Burton visited it in disguise in 1853. The pop. is estimated at about 50,000, with the periodical addition of from 100,000 to 150,000 pilgrims.

Méchain (mā-shaṇ), PIERRE FRANÇOIS ANDRÉ, a French astronomer, born in 1744; died in 1804. His name is notably connected with the measurement of a degree of the meridian in order to get a natural basis for the new French decimal system of weights and measures.

Mechanical Powers (me-kan'i-kal) the simple instruments or elements of which every machine, however complicated, must be constructed; they are the lever, the wheel and axle, the pulley, the inclined plane, the wedge and screw. See those terms.

Mechanics (me-kan'ikz), the term originally used to denote the general principles involved in the construction of machinery. Subsequently the term became divorced from all direct connection with practical applications, and dealt entirely with abstract questions in which the laws of force and motion were involved. In this sense mechanics is usually divided into *dynamics*, which treats of moving bodies and the forces which produce their motion; and *statics*, which treats of forces compelling bodies to remain at rest. See *Dynamics* and *Statics*.

Mechanicsville, a town of Saratoga Co., New York, on the Hudson River, 20 miles N. of Albany. It has manufactures of sash, blinds, paper boxes, knitted goods, etc. Pop. 6634.

Mechitarists (me-chit'a-ristz), an important section of Armenians acknowledging the authority of the pope, but retaining their own ritual with a few alterations. They have printed the best editions of Armenian classics. The name originated from *Mechitar* Da Petro, who founded a religious society at Constantinople for the purpose of disseminating a knowledge of the old Armenian language and literature.

Mechlin (mek'lin; French, *Malines;* Flemish, *Mechelen*), a town of Belgium, on the Dyle, in the province of and 14 miles S. S. E. of Antwerp. Its principal edifices are its cathedral, an ancient Gothic structure; the church of Nôtre Dame, the church of St. Peter and St. Paul, and the archbishop's palace. The manufactures, which are numerous, consist of the famous Mechlin lace, felt and straw hats, woolen stuffs, etc. Pop. 56,103.

Mecklenburg-Schwerin (mek'lin-börg-shvā-rēn'), a grand-duchy of the German Empire; bounded on the north by the Baltic Sea, elsewhere chiefly by Prussia and Mecklenburg-Strelitz; area, 5135 square miles; capital, Schwerin. The surface is flat, except where a ridge of low hills forms the watershed between the Elbe and the Baltic. The sea coast is indented by several inlets, and lakes are very numerous. The streams flow partly to the Elbe, partly to the Baltic. The chief products are corn, peas, beans, potatoes, beets and turnips. Both horses and cattle are exported. Distilling is largely carried on. The government is intimately connected with that of Mecklenburg-Strelitz. Each duchy has a separate legislative body, but both meet annually, and legislate for the whole of Mecklenburg. Pop. (1910) 639,879.

Mecklenburg-Strelitz (strā'litz), a grand-duchy of the German Empire; capital, Neu-Strelitz. It consists of two larger and several smaller districts; the former separated by the interposition of Mecklenburg-Schwerin, and the latter existing in separate patches. The whole area is estimated at 1052 square miles. The physical features and general character of this duchy are similar to those of Mecklenburg-Schwerin (which see). Pop. (1905) 103,451.

Meconic Acid (me-kon'ik), an acid with which morphia is combined in opium. When pure, meconic acid ($C_7H_4O_7$), forms small, white crystals. Its aqueous solution forms a deep red color with the persalts of iron, which therefore are good tests for it.

Medallion (me-dal'yun), a term applied to the large antique medals struck in Rome and in the provinces by the emperors. They were usually of gold or silver, and exceeded in size the largest coins of these metals of which the name and value are known. They were probably struck to commemorate persons or events. In architecture the term is applied to any circular or oval, and sometimes square, tablet, bear-

ing on it objects represented in relief, as figures, heads, animals, flowers, etc.

Medals. See *Numismatics.*

Medea (me-dē′a), in Greek mythology, daughter of Æetes, king of Colchis, on the eastern coast of the Black Sea. She enabled Jason to obtain the celebrated golden fleece (which see), and lived with him for ten years, until he discarded her in favor of Glauce or Creusa, daughter of King Creon. In revenge she sent Glauce a bridal robe which enveloped her in consuming flame, and thereafter she slew her own children by Jason. There are many versions of this Greek myth, and it has been a favorite theme alike with painter and dramatist. Euripides wrote a well-known tragedy of this name. See also *Jason* and *Argonauts.*

Medellin (me-*d*el-yēn′), a city of Colombia, capital of the department and 40 miles southeast of Antioquia. Pop. about 50,000.

Medford (med′furd), a city of Middlesex Co., Massachusetts, on the Mystic River, 5 miles N. N. W. of Boston. It is the seat of Tufts College, and contains several historical buildings, the Craddock House dating from 1634. It has large print works, and manufactures of felt boots, woolen goods, chemicals, etc. Pop. 23,150.

Medford, a city of Jackson Co., Oregon, 6 miles E. of Jacksonville. It has distilling and refining works. Pop. 8840.

Media (mē′di-a), an ancient country in Western Asia, formerly the seat of a powerful kingdom, corresponding nearly to the northwestern portion of modern Persia. According to the Greek historians, Deioces, B.C. 708-655, was the first native king, but the true founder of the great Medean monarchy was Cyaxares, 633-593 B.C. He extended his dominion over the highlands of Southern Armenia and Asia Minor as far as the Halys, overthrew the Assyrian monarchy, and in conjunction with Nabopolassar, king of Babylon, destroyed Nineveh 607 or 606 B.C. Astyages, the successor of Cyaxares and the last king, reigned for thirty-five years, B.C. 593 to 558, when he was overthrown or deposed by Cyrus. He is supposed by some authorities to be the Darius the Mede mentioned in the Book of Daniel as reigning over Babylon after its conquest by the Persians. The Medes and Persians, from their near resemblance to each other, appear to have amalgamated readily after the conquest or revolution which gave the ascendency to the latter. Media henceforward formed part of the Persian Empire, and shared its fate.

Mediastine, Mediastinum (mē-di-as-tī′num), the membranous septum of the chest, formed by the duplicature of the pleura under the sternum, and dividing the cavity into two parts.

Medical Jurisprudence. See *Forensic Medicine.*

Medici (mā′di-chē), a Florentine family who rose to wealth and influence by successful commerce, and who continued to combine the career of mer-

Cosmo de' Medici.

chants and bankers with the exercise of political power, a princely display of private munificence, and a liberal patronage of literature and art. The Medici were associated with the history of the Florentine republic from an early period, but they first became prominent in the person of Salvestro, who became gonfalonier in 1378.—Giovanni de' Medici (1360-1429) amassed great riches by trade; rendered great services to the city, and in 1421 became gonfalonier. He was succeeded by his son Cosmo (the elder, 1389-1464), surnamed the *father of his country.* Cosmo acquired immense wealth and influence, and laid the foundation of his reputation by the munificent patronage of art and letters, and the conjunction of consummate statesmanship with his commercial enterprise. He was for thirty-four years the sole arbitrator of the re-

A SURGICAL CLINIC

Modern surgery is taught largely by actual demonstration of methods in the clinic. The patient lies upon the operating table in the foreground; the operating surgeon stands at his head explaining the operation about to be performed to the students in the tiers of seats in the background. The assistant surgeons and nurse are grouped in the lower end of the room.

public and the adviser of the sovereign houses of Italy.—His grandson, LORENZO THE MAGNIFICENT (1449-92), was the second great man of the house of Medici. He governed the state in conjunction with his brother GIULIANO (1453-78) till the latter was assassinated by the Pazzi, a rival Florentine family. Escaping from this massacre he sustained a war with Ferdinand of Naples, with whom he signed a definitive peace in 1480. The rest of Lorenzo's reign was passed in peace and in those acts of profuse liberality and magnificent patronage of arts and sciences in which he rivaled or excelled his grandfather. He left three sons—PIERO (1471-1503), GIOVANNI (afterwards Pope Leo X), and GIULIANO, duke of Nemours. Piero succeeded his father, but was deprived of his estates when the French invaded Italy in 1494. He finished his career in the service of France. His eldest son, LORENZO, came to power by the abdication of his uncle, Giuliano, who became Duke of Urbino. He died in 1519, leaving a daughter, the famous Catherine de Medici, queen of France. After several reverses in the family, Alessandro, an illegitimate son of the last named Lorenzo, was restored to Florence by the troops of Charles V, and by an imperial decree he was declared head of the republic, and afterwards Duke of Florence. The next name of importance in the family is that of Cosmo 'the great,' in 1537 proclaimed Duke of Florence and afterwards Grand-duke of Tuscany. A learned man himself, he was a great patron of learning and art, a collector of paintings and antiquities. He died in 1574.—FRANCISCO MARIA, his son, obtained from the Emperor Maximilian II, whose daughter, Joanna, he had married, the confirmation of his title of grand-duke in 1575, which continued in his family until it became extinct in 1737 on the death of Giovanni Gasto, who was succeeded by Francis, duke of Lorraine. See *Tuscany*, *Catherine de Medici*, *Marie de Medici*.

Medicine (med'i-sin), the science of diseases, and the art of preventing, healing, or alleviating them. It deals with the facts of disease, with the remedies appropriate to various diseases, with the results of accident or injury to the human body, with the causes that affect the origin and spread of diseases, and with the general laws that regulate the health of individuals and the health of communities. It is broadly divided into two great sections, surgery (which see) and medicine proper. A department related to both is obstetric medicine or midwifery, dealing with childbearing and with the diseases peculiar to women. With this department is closely connected that which comprehends the diseases of children. There are also departments dealing with special organs, such as those relating to diseases of the eye, of the ear, of the throat, of the skin, etc., each of which occupies its own domain of knowledge, and is represented by highly-trained specialists. The treatment of the insane, as it is concerned with nervous diseases and correlated states of other organs, is an integral part of medical practise. War also has given rise to special developments of medical and surgical science, viz.: military hygiene and military surgery; and the administration of the law has created a special branch—medical jurisprudence or forensic medicine.

At first all diseases, in common with other phenomena, were attributed to supernatural causes, and the direct doings of unseen beings, and had to be exorcised by ceremonies, prayers and adjurations. In course of time it was recognized that diseases were natural phenomena, but at the same time each was held to be a principle or entity distinct from its effects, and each disease was supposed to have a specific remedy—something that would actually cure the disease. Such views led to the adoption of various systems of treatment. Several of these are of recent development. For instance, one school holds that only vegetable remedies are appropriate to the treatment of diseases. Another school upholds the hydropathic system, or the virtues of the bath in one or other of its forms, as a universal panacea for all human ills. A third maintains the application of the homœopathic principle that similars are cured by similars, that is to say, diseases are cured by substances having, in small doses, an action on the body similar to that of the disease, so that one might treat diseases by a series of fixed and specific formulæ all depending on this single principle. A fourth, of late origin, maintains the curative powers of skilful manipulation of the bones, muscles and nerves. Finally, even in orthodox medical circles, there is a strong disposition to attribute success of treatment to particular drugs, and to simply act on a principle contrary to that of homœopathy, viz., that diseases are cured by contraries, that is, by remedies having an action on the body the reverse of that of the disease. Most of these opinions depend on a mistaken view of disease. Anything that interferes with the free and healthy action of any part of the body produces a state of disease, and the symptoms of the disturbance manifest the disease. For instance, in

the case of zymotic diseases, they are caused by the entrance into the body of living germs which grow and multiply in the blood and tissues, and interfere with the various organs. These germs are, however, not the disease, but the cause of the disease. Again many diseases are due, not to something that has entered the body, but to a breaking down of a certain part of the system. In these the physician seeks to restore as far as possible the conditions of healthy action; to remove if he can the cause of the disease, to relieve pain, and to control symptoms so as to direct them towards recovery. In germ diseases, treatment by inoculation of prepared lymphs, derived from cultures of the specific microbes causing the disease, is now widely practised, the oldest example of it being that of vaccination in smallpox.

The chief departments of medical science may be given as follows:—The science of health is called *hygiene*, or as far as it relates to the regulation of the diet, *dictetics*.. *Pathology* is the science of disease, of that in which it consists, its origin, etc. *Nosology* treats of the various sorts of diseases, their origin and symptoms, and strives to arrange diseases according to a scientific classification. *Pathological anatomy* deals with the mechanical alterations and changes of structure. *Therapeutics* is the science of the cure of diseases, often divided into *general*, treating of the subject of cure in general, its character, etc.; and *special*, of the cures of the particular diseases. *Surgery* treats of the mode of relieving derangements by operative means. *Obstetrics* treats of the modes of facilitating delivery. *Materia medica* is the science of medicines, their external appearance, history and effects on the human organization. *Pharmacy* teaches how to preserve drugs, etc., and to mix medicines. *Clinics* applies the results of all these sciences at the bedside of the patient. (See the various medical articles under separate heads.) Among names famous in the history of medicine, may be mentioned Hippocrates, the father of medicine; Celsus, Galen, Avicenna, Paracelsus, Vesalius, Van Helmont, Sylvius, Stahl, Harvey, Boerhaave, Hoffman, Brown, Hunter, Jenner, Hahnemann, Physick, Gross, Agnew, Holmes, Lister, etc.

Medicine Hat, a town of Alberta province, Canada, on the Saskatchewan River. Pop. (1911) 5608.

Medick (med'ik; *Medicago*), a genus of plants, nat. order Leguminosæ, nearly allied to the clover. For purple medick or lucerne, see *Lucerne*. Black medick (*M. lupulina*), so called from the black color of the ripe pods, is also known, from the color of its flower, as *yellow lucerne*. There are about forty species, natives of Europe, Western Asia and Northern Africa.

Medina (mē-dī'na; Arabic *Medínah-el-Nebí*, 'The Prophet's City'), a city in Arabia, containing the tomb of Mohammed, about 250 miles north by west of Mecca, in the most fertile spot of all Hejaz. The Mosque of the Prophet, which is the only building of importance, contains the sacred tomb, enclosed with a screen of iron filagree. Though the pilgrimage to the tomb is not considered by Mohammedans as an imperative duty, like that to the Kaaba, yet it is estimated that one-third of the Mecca pilgrims go on to Medina. Unbelievers enter the city at peril of their lives. Pop. about 40,000.

Medina, a town of Orleans Co., New York, on the Erie Canal, 41 miles W. of Rochester. The picturesque Medina Falls are in the vicinity. It has fruit evaporators, vinegar, pickling and other manufactures. Pop. 5683.

Medina-Sidonia (sē-dō'nē-ä), a town of Spain, in Andalusia, in the province of Cadiz, 23 miles E. S. E. of Cadiz city. Pop. 11,040.

Medinet-el-Fayoum (me-dē'net el fī-öm'), a town of Egypt, capital of the Fayoum, about 25 miles west of the Nile, a place of active trade. Pop. about 40,000.

Mediterranean Sea (med-i-tėr-rā'-nē-an; Lat. *Marc Internum*), the great inland sea between Europe, Asia and Africa, about 2200 miles long and 1200 in extreme breadth. It communicates on the west with the Atlantic Ocean by the Strait of Gibraltar, and on the northeast with the Black Sea through the Sea of Marmora and the Straits of the Dardanelles and Constantinople. It is very irregular in shape, and is divided, near its center, into two distinct and not very unequal portions, an eastern and a western, the latter lying west of Italy, Sicily and Cape Bon in Africa. The other important subdivisions are the Adriatic Sea or Gulf of Venice, and the Ægean Sea or Archipelago. The largest and most important islands are Sicily, Corsica and the Balearic Isles, in the west division; and Cyprus, Rhodes, Crete, the Ionian Isles and Malta, in the east division. The principal rivers which discharge themselves directly into the Mediterranean are the Ebro, Rhône, Po and Nile. The depth varies from 30 to 2150 fathoms. Owing to the very narrow channel which connects the Mediterranean with the

main ocean there is very little tide; though on parts of the African coast, etc., a rise of more than 6 feet sometimes occurs. The Mediterranean abounds with fish, and also furnishes the finest coral and sponges. It is a great highway of traffic.

Medium (mē′dī-um), the name given to one who professes to be able to communicate with the spirits of the departed and bring messages from them to friends on earth; usually known as a spiritual medium.

Medjidie (med-jid′i-ā), a Turkish order of knighthood, instituted in 1852, and conferred on many British and other officers who took part with Turkey in the Crimean war.—The term is also applied to a Turkish golden coin worth about $4.50.

Medlar (med′lär), a tree of the genus *Mespilus*, the *M. germanica*, found wild in several parts of Central Europe, and cultivated for its fruit, which is remarkable for its acerbity when first gathered. It loses this acerbity after a few weeks' keeping.

Medoc (me-dok′), a district of Western France, in the department of the Gironde. It is celebrated for its wines. See *Bordelais Wines*.

Medulla (me-dul′a), or MARROW, in animals, the highly vascular connective tissue, interspersed with adipose or fat-cells, which fills up the hollow shafts or *medullary canals* of long bones, and which forms a center of nourishment for the inner osseous material of which the bone is composed. The *medulla oblongāta* is the upper enlarged portion of the spinal cord, while the *medulla spinālis* is the continuation downwards of the brain matter. In vegetable physiology the *medulla* is otherwise known as the *pith*. See *Botany*.

Medu′sa. See *Gorgons*.

Medusidæ (me-dū′si-dē), the jelly-fishes or sea-nettles, a name given to cœlenterate animals of the class Hydrozoa, being free and oceanic animals, the most typical of which consist of a single *nectocalyx* or swimming-bell, from the roof of which one or several polypites are suspended. The nectocalyx is furnished with a system of canals, and a number of tentacles depend from its margin. A number of the medusæ formerly believed to be distinct animals have been shown to be really the free, generative buds of other Hydrozoa.

Medway (med′wā), a river of England, which flows in a winding course across Kent, past Tunbridge and Maidstone, to Rochester and Chatham, where it spreads out into a broad estuary, joining that of the Thames. It is navigable to Maidstone; length 70 miles.

Meehan (mē′han), THOMAS, botanist, born in England in 1826; removed to Philadelphia at an early age, and became prominent among American botanists for active research. He was botanist of the Board of Agriculture of Pennsylvania. He died in 1901.

Meerane (mā′rȧ-ne), a town in the kingdom of Saxony, 12 miles N. N. E. of Zwickau, with manufactures of woolens, dye-works, etc. It has grown recently from an insignificant country town to a manufacturing center. Pop. (1905) 26,005.

Meerschaum (mēr′shąm), a hydrated silicate of magnesium, consisting of 60.9 parts silica, 26.1 magnesium, and 12.0 water, occurring as a fine white compact clay. It is found in Europe, but more abundantly in Asia Minor, and is manufactured into tobacco pipes.

Meerut (mē′rut), or MIRAT′, a city, cantonment, and administrative center of the Northwest Provinces of India, situated between the Jumna and the Ganges, 36 miles northeast of Delhi. It is surrounded by a dilapidated wall enclosing narrow streets and wretchedly-built houses. The church is one of the largest in India, and there is also a Roman Catholic chapel, government schools, hospital, etc. Meerut was the scene of the first great outbreak among the Sepoys, in 1857. Being at an altitude of 800 feet above the sea, it is an agreeable and salubrious residence. Pop. 118,642.—The DISTRICT OF MEERUT occupies an area of 2379 square miles, and is the most fertile territory in the region known as the Doâb.

Megaceros. See *Elk* (*Irish*).

Megæra (me-jē′rȧ), one of the Furies (which see).

Megalichthys (meg-a-lik′this), a genus of fossil ganoid fishes of the carboniferous period, characterized by large smooth, but minutely punctured, enameled scales, some of which have been found as large as 5 inches in diameter, indicating a fish of great size.

Megalithic Monuments (meg′a-li-thick), large unhewn, or partly hewn, stones, or structures of such stones erected in prehistoric times, either as burial monuments or for religious or other purposes. Monuments of this kind are numerous, being found most abun-

dantly in North Africa, Europe, and India. They also exist in South, but not in North America. They embrace four classes: (1) *Menhirs*, tall, massive pillars, or monoliths, standing upright in the ground or with their bases imbedded. (2) *Alignments*, monoliths arranged in lines. (3) *Dolmens*, chambers formed of upright stones roofed over by one or more capstones, forming a tumulus or cavern. (4) *Cromlechs*, circular, oval, or irregular enclosures formed by monoliths standing at some distance apart. Many examples of all of these exist, some remarkable for the great size of the stones handled.

Megalonyx (meg-a-lō′niks), a genus of fossil edentate mammals, allied to the sloth, but adapted for a terrestrial instead of an arboreal life, found in the upper tertiaries of America.

Megalosaurus (meg-a-lō-sạ′rus), a fossil reptile found in the Oolite and Wealden strata. Its length has been estimated at between 40 and 50 feet. Its powerful, pointed and trenchant teeth indicate its carnivorous habits, and from its gigantic size and strength it must have been very destructive to other animals.

Megalotis (meg-a-lō′tis), the generic name of the fennecs.

Megaphone (meg′a-fōn), an instrument invented by Thomas A. Edison for carrying the sound of the voice long distances without the aid of wires. It consists of two large funnels which collect the waves of sound and transmit them to the ears by means of tubes. It is used in connection with the telephone to convey sound through a large hall. The word is also applied to an open-mouthed trumpet which enables the sound of the voice to be distinctly heard at a considerable distance.

Megapodius (meg-a-pō′di-us), a genus of rasorial birds, type of the family Megapodidæ, the best known and most remarkable species of which is the Australian jungle-fowl (*M. tumŭlus*), a large bird remarkable for erecting considerable mounds, composed of earth, grass, decayed leaves, etc., sometimes 15 feet high and 150 in circumference, and in the center of which, at a depth of 2 or 3 feet, it deposits its eggs, leaving them to be hatched by the heat of the fermenting vegetable mass. The leipoa and tallegalla are akin.

Megaptera (me-gap′tėr-a), a genus of whales of the family Balænidæ, including the hump-backed whales

Meg′ara, a town of Attica, Greece. See *Megaris.*

Megaris (meg′a-ris), a small district or state of ancient Greece, partly in Northern Greece, partly on the Corinthian isthmus. The only important town was Megara, situated a mile from the sea. Megaris had flourishing colonies at an early period, but afterwards became annexed to Attica.

Megatherium (meg-a-thē′ri-um), a fossil genus of edentate mammals, allied to the sloths, but having feet adapted for walking on the ground, found in the upper Tertiary or pampas deposits of South America. It

Megatherium restored.

was about 8 feet high and its body 12 to 18 feet long. Its teeth prove that it lived on vegetables, and its forefeet, about a yard in length and armed with gigantic claws, show that roots were its chief objects of search.

Megna (meg′na), a river or estuary of Bengal, which carries the waters of the Ganges and the Brahmaputra to the sea. Its most noteworthy characteristic is the 'bore' or tidal wave which advances swiftly at the height of 20 feet.

Megrim (mē′grim), the term applied when a horse reels, stands for a minute dull and stupid, or falls to the ground, lying for a time partially insensible. Such attacks are also called vertigo. They come on suddenly, and are most frequent during hot weather, and when the animal is drawing up hill. They indicate weakness of heart action, or disturbance of brain circulation by the pressure of tumors.

Mehemet Ali (meh′he-met), Viceroy of Egypt, born at Kavala, in Macedonia, in 1769; died in 1849. He entered the Turkish army, and served in Egypt against the French; rose rapidly in military and political importance; became pasha of Cairo, Alexandria, and subsequently of all Egypt. In

1811 he massacred the Mamelukes to the number of 470 in Cairo, and about 1200 over the country. He then commenced, by the orders of the Porte, a war of six years' duration against the Wahabees of Arabia, which was brought to a successful conclusion by his son Ibrahim, and secured him the possession of Hejaz. Ibrahim also aided in bringing a large part of the Soudan under Egyptian rule. By means of a vigorous domestic policy Mehemet reduced the finances to order; organized an army and a navy; stimulated agriculture, and encouraged manufactures. In 1824-27 he assisted the sultan in endeavoring to reduce the Morea, which led to the destruction of his fleet by the allied European powers at Navarino (1827). Subsequently he turned his arms against the sultan, and in his efforts to secure dominion over Syria by armed invasion he was so far successful (see *Ibrahim Pasha*) that the European powers had to interfere and compel him to sign a treaty in 1839, which gave him the hereditary pashalic of Egypt in lieu of Syria, Candia and Hejaz. In his latter days he sank into dotage.

Méhul (mā-ûl′), Etienne Henri, musical composer, born at Givet in 1763; died in 1817. He studied under Gluck; made his début as a composer at the Paris Opéra Comique with his opera *Euphrosine and Corradin* (1790), and followed up his success with *Irato*, *Joseph*, and other operas to the number of forty-two. Méhul gained considerable fame by his musical setting of Chenier's patriotic songs, *le Chant du Départ*, etc., and other pieces popular during the revolution.

Meiningen (mī′ning-en), a town in Germany, capital of the duchy of Saxe-Meiningen, in a narrow and picturesque valley, on the Werra, 40 miles S. S. E. of Erfurt. The castle of the duke contains a picture gallery, cabinet of coins, public and private library, etc. The theater has attained some fame for its excellent companies. Pop. (1905) 15,989.

Meissen (mī′sen), an ancient town of Saxony, founded by Henry I. in 922-933, 14 miles W. N. W. of Dresden, at the influx of the Triebisch into the Elbe. On a height above the town stand a noble Gothic cathedral, founded in the thirteenth century, and an extensive castle in the late Gothic style, belonging to the fifteenth century, recently restored and decorated with frescoes. Porcelain (in the royal porcelain factory near the town) is the staple manufacture. Meissen is the see of an archbishop. Pop. (1905) 32,336.

Meissonier (mā-son-yā), Jean Louis Ernest, a French painter, born in Lyons in 1815; went to Paris in 1830; first picture exhibited, *The Visitors*, 1834. He first became known as an illustrator of books, but rapidly became famous for the singular perfection of his

J. L. E. Meissonier.

art. His pictures, which, whether in genre or in portraiture, are almost without exception upon a small scale, are characterized by great minuteness of execution and high finish, but are at the same time not less remarkable for their excellence in composition and breadth of treatment. They have the force of appeal of large works. The greater number of them are groups of figures (chiefly of the seventeenth and eighteenth centuries) in conversation, single quiescent figures, and battle scenes or military subjects. Great accuracy of draughtsmanship, keen observation, and the sharp accentuation of the important note in the picture distinguish all his works. Among his pictures, which possess an astonishing market value, may be mentioned, *The Smoker* (1839); *La Partie des Boules* (1848); *Napoleon III at Solferino* (1864); the *Cavalry Charge* (1867), sold for 150,000 francs; the picture entitled *1807* (1875), one of his largest works, representing Napoleon I in the battle of Friedland, sold for 300,000 francs; *Jena* (1889). He died in 1891.

Mekong (mā′kong), Mekhong, or Cambodia, the longest of all the Indo-Chinese rivers, rises in East Tibet, flows through part of China, Siam, Cambodia and French Cochin-China, and enters the Chinese Sea by several mouths; length estimated at 2700 miles. It is of comparatively little use for inland navigation, its channel being obstructed by rapids, but steamers have ascended it to lat. 14° N.

Mekran (mek-rän′), a maritime district of Southern Asia, forming part of Persia and of Beluchistan. It is mostly arid and barren, but there are fertile tracts along the river valleys yielding excellent dates.

Mela (mē′lȧ), POMPONIUS, a Roman geographer who flourished during the first century after Christ, and is the author of a treatise, *De Situ Orbis*, containing a concise view of the state of the world as known to the Romans.

Melaleuca. See *Cajeput.*

Melancholia, MELANCHOLY. See *Insanity.*

Melanchthon (me-langk′thon; Ger. (me-lang*h*′ton), PHILIP, a German reformer, born at Bretten, in the Palatinate, in 1497; died at Wittenberg in 1560. His father was an armorer, and his original German name was Schwarzerd, which he Grecized into Melanchthon, or Melanthon. Both names denote 'black earth.' After having studied at Pforzheim he removed to Heidelberg University, where he took his bachelor's degree, and afterwards to Tübingen University, where he attained the degree of master, and became a lecturer. In 1518, at the instigation of Luther and Reuchlin, he was invited by Frederick, elector of Saxony, to fill the chair of Greek in the recently founded University of Wittenberg. In 1519 he accompanied Luther to Leipzig, in order to dispute with Dr. Eck, and in 1521 he published his famous *Loci Communes*, an exposition of Protestant dogmatics, which ran through some sixty editions in his lifetime, and was followed by other influential writings, such as the *Epitome Doctrinæ Christianæ* (1524). There is no doubt that many of the plans carried out by the reformers were the result of Melanchthon's wise suggestions. His Greek scholarship was also of inestimable advantage to Luther in his work of translating the Bible. In 1530 Melanchthon was appointed to draw up the general *Confession* which was presented to the emperor at Augsburg (hence known as the *Augsburg Confession*, which see), and he also wrote the *Apology* for it. Before Luther's death, in 1546, a certain difference of view developed itself between the two reformers, and after that event Melanchthon lost in some measure the confidence of a section of the Protestants and was involved in painful controversies, being accused by one party of a too great leaning to Calvinism, by another of a similar leaning to Catholicism.

Melanesia (mel-a-nē′shė-a), a group of islands stretching from the northeast of New Guinea to the tropic of Capricorn, and including New Britain Archipelago (with the Admiralty Islands), Solomon Islands Queen Charlotte or Santa Cruz Islands, New Hebrides, New Caledonia, Loyalty Islands and the Fiji Islands.

Melanism (mel′an-izm), the condition of abnormal blackness, or a tendency to blackness, in the hair or plumage of animals. It is the opposite of albinism, or whiteness. Black squirrels, leopards, etc., are examples.

Melanite (mel′an-īt), a lime-iron variety of garnet, of a velvet black or grayish black, occurring always in crystals of a dodecahedral form. See *Garnet.*

Melanorrhœa (mel-an-o-rē′a), a genus of very large Indian trees, belonging to the nat. order Anacardiaceæ. It includes *M. usitatissima*, or black varnish tree—which yields when tapped a varnish much valued for lacquering.

Melanthaceæ (mel-an-thā′se-ē), a nat. order of poisonous endogens, consisting of bulbous, tuberous, and fibrous rooted plants, with or without stems, and having parallel-veined leaves. There are about 130 species, natives of all parts of the world, some of which resemble crocuses and some small lilies. The most important species are medical plants, as colchicum, white hellebore.

Melaphyre (mel′a-fīr), a compact black or blackish-gray igneous rock, consisting of a matrix of labradorite and augite, in which are embedded crystals of the same minerals, and sometimes uniaxial mica, hornblende and iron pyrites. It is essentially a basalt.

Melastoma (me-las′to-ma), a genus of plants of the nat. order Melastomaceæ (which see).

Melastomaceæ (me-las-tō-mā′se-ē), an extensive nat. order of polypetalous exogens, nearly related to Myrtaceæ. They are shrubs or trees, rarely herbs, with opposite or whorled leaves, often prominently three or five nerved, and often handsome flowers. The species, of which about 1200 are known, abound chiefly in tropical countries, especially in South and West Africa.

Melbourne (mel′burn), a city of Australia, capital of the colony of Victoria, on the Yarra-Yarra, about 2½ miles (6¾ miles by water) from Port Phillip Bay, upon which are the ports of Sandridge, or Port Melbourne and Williamstown, possessing large and commodious piers; while Hob-

son's Bay (the northern extension of Port Phillip Bay) and Port Phillip Bay itself affords unlimited anchorage for the largest vessels. Melbourne was founded in 1836 during the premiership of Lord Melbourne, after whom it was named. It was incorporated in August, 1842, and in 1849 erected into an episcopal see. The city and its suburbs occupy an extensive area, which is mostly hilly or undulating, with the Yarra winding through it, the city proper, on the north bank of the Yarra, being the central and most important business part of the whole. Here the principal streets are about a mile long and 99 feet wide, and run at right angles to one another, being lined with handsome and substantial edifices. Beyond the city proper are the far more extensive suburbs, such as Collingswood, North Melbourne, Fitzroy, Carlton, Brunswick, Prahran, Richmond, Hawthorn, St. Kilda, Kew, South Yarra, etc. The public buildings of Melbourne as a whole are handsome and substantial, and quite on a par with those of cities of like size in Europe. Among them the most remarkable are the houses of parliament, the treasury, the law courts, the free library, containing over 110,000 volumes; the mint, a very handsome quadrangle; the university, with an admirable museum attached; the Ormond Presbyterian college; the town hall, capable of seating 4000 persons; the post-office; the exchange; the athenæum; the theaters; the Anglican and Roman Catholic cathedrals and numerous churches, etc. There are several public parks, a finely laid-out botanical garden, and a splendid race course. There is access to the center of the city for vessels of considerable size by means of the river Yarra, the navigation of which has recently been much improved. The shipping trade is large, both in exports and imports, the chief of the former being wool, of the latter manufactured goods. Most imports are subject to a heavy duty. By its railway systems Melbourne is connected with all the principal towns of the Australian continent. The chief industrial products are leather, clothing, furniture, flour, ales, cigars, ironware, woolens, etc. A Centennial International Exhibition was held here in 1888 in celebration of the founding in 1788 of the Australian Colonies. While thoroughly representative of all the arts and industries of Victoria, New South Wales, South Australia, Queensland, Tasmania and New Zealand, it brought together a splendid collection of exhibits from Europe, Asia, and America. Population of city proper, 68,853; inclusive of suburbs, 555,750.

Melbourne,

William Lamb, Viscount, an English statesman, born in 1779; died in 1848. Educated at Eton and Cambridge, he became a barrister, but relinquished the law and became member of parliament for Leominster. During the ministry of Canning he was secretary for Ireland; in 1830 he became home secretary in the Grey administration, and succeeded to the premiership when it was overthrown in 1834 on the Irish question. He continued to lead the Whig party with varying success until 1843, when he resigned and retired from public affairs. His political career is chiefly remarkable for the wise counsel and judgment with which he guided the young Queen Victoria on her accession in 1837.

Melchites (mel'kīts), an Eastern body of Christians who, while adhering to the ceremonies and liturgy of the Greek Church, acknowledge the authority of the pope. The name is also given to such members of the Greek community as are Roman Catholics.

Melchizedek (mel-chĭz'e-dek), a personage mentioned in Gen., xiv, 18, as king of Salem and a priest of the most High God. Referred to again Ps., cx, 4, and Heb., v, vi, vii. As to his personality and character nothing is known.

Meleager (me-le-ā'gėr), in Greek mythology, the son of

Œneus, king of Calydon. He distinguished himself in the Argonautic expedition and more particularly at the Calydonian hunt, killed the boar, and gave its skin as the highest token of regard to his beloved Atalanta.

Meleagris (me-le-ag′ris), the genus of birds to which the turkey belongs, type of the family Meleagridæ.

Melegnano (mel-e-nyä′nō). See *Marignano.*

Meles (mē′lēz), the genus to which the badger belongs.

Melfi (mel′fē), a town of Southern Italy, province of Basilicata, or Potenza, on a lofty volcanic height, 75 miles E. N. E. of Naples, surrounded by dilapidated walls. Its chief trade is in an excellent wine. Pop. 14,649.

Melia (mē′li-a), a small genus of trees, type of the nat. order Meliaceæ, natives of tropical Asia and Australia. *M. Azadirachta,* the neem tree or margosa, is a native of the East Indies. Its bark yields a bitter used as a tonic, its seeds yield a valuable oil, and its trunk a tenacious gum. *M. Azadarich,* sometimes called *Persian lilac, pride of India,* and *bead tree,* is a native of the north of India, now cultivated in the United States, as well as in southern Europe.

Meliaceæ (mel-i-ā′se-ē), a nat. order of polypetalous dicotyledons, distinguished by their stamens being united into a tube. See *Melia.*

Melilla (mā-lēl′ya), a rocky promontory on the north coast of Morocco, about 140 miles east of the Straits of Gibraltar, held by Spain since 1496, and now strongly fortified. In 1893 a conflict between the Spaniards and Riff-Moors around its defenses resulted disastrously to the latter.

Melilot (mel′i-lot; *Melilōtus*), a genus of leguminous plants, suborder Papilionaceæ, differing from the clovers in having racemose flowers. White Melilot has been recommended as a fodder plant under the names of *Cabul* and *Bokhara clover.*

Melinda (me-lin′da), a seaport of Eastern Africa, on the Zanzibar coast, formerly a place of importance.

Melinite (mel′i-nīt), an explosive prepared from picric acid and the solid residue from the evaporation of collodion.

Meliphagidæ (mel-i-fag′i-dē), the honey-eaters or honey-suckers, a family of birds which abound in all parts of Australia.

Melis′sa, Melitta, the genus of plants to which belongs *M. officinālis,* or common balm, used in medicine as a carminative, stomachic and corrector of flatulence.

Mel′ita. See *Malta.*

Melkart (mel′kart), the national god of the ancient Phœnicians, a god of the sun.

Mellite, Mellilite (mel′īt), honey-stone, a mineral of a honey-yellow or brownish color and resinous luster.

Melocca, Melucco (mel-ō′ka), a genus of plants of the nat. order Basellaceæ. *M. tuberosa,* a species of the genus, is cultivated in Peru, Bolivia and New Grenada, on account of its esculent tuberous roots.

Melocactus (mel-o-kak′tus), a genus of plants, nat. order Cactaceæ, characterized by the flowers being produced in a hemispherical or cylindrical head at the top of the plant. The plants themselves consist of simple fleshy stems of a globular or conical form, with numerous prominent ribs armed with fascicles of stiff spines placed at regular distances.

Melodrama (mel-u-drä′ma), originally and strictly, that species of drama in which the declamation of certain passages is interrupted by music, but now the term has come to designate a romantic play, generally of a serious character, in which effect is sought by startling incidents, striking situations, and exaggerated sentiment, aided often by splendid decoration and music.

Melody (mel-u-di), in the most general sense of the word any successive connection or series of tones; in a narrower sense, a series of tones which please the ear by their succession and variety; and in a still narrower sense, the particular air or tune of a musical piece.

Meloe (mel′o-e), a genus of beetles belonging to the family Canthariдæ; otherwise called oil-beetles.

Melon (mel′un; *Cucŭmis Melo*), a well known plant and fruit of the nat. order Cucurbitaceæ or gourds. It is an herbaceous, succulent, climbing or trailing annual, cultivated for its fruit in hot eastern countries from time immemorial. There are many varieties, as the Cantaloupe, which is reckoned the best, the Egyptian, Salonica, and Persian melons, etc. The watermelon (*C. Citrullus*) is much cultivated in the warmer parts of the world on account of its refreshing juice, which, however, is less sweet than that of the common melon. The musk-melon is a variety of *Cucŭmis Melo.*

Melos (mē'lōs), now MILOS or MILO, an island belonging to Greece, in the Grecian Archipelago, in the southeast of the Gulf of Ægina, one of the Cyclades; area, 64 sq. miles. Pop. 12,774. In

Melon (*Cucŭmis Melo*).

1820 a peasant discovered here the celebrated statue known as the Venus of Milo, now placed in the museum of the Louvre at Paris.

Melpomene (mel-pom'e-nē), the muse who presides over tragedy, daughter of Zeus and Mnemosyne. She is generally represented as a young woman, with vine leaves surrounding her head, and holding in her hand a tragic mask.

Melrose (mel'rōz), a town of Scotland, in the county of Roxburgh, 31 miles S. S. E. of Edinburgh. Its celebrated abbey was founded by King David in 1136; destroyed by Edward II in 1322; rebuilt by Bruce in 1326, and partly demolished by the English in 1545. Pop. 2195.

Melrose, a city of Middlesex Co., Massachusetts, 7 miles N. of Boston. It has manufacturers of boots and shoes and a large rubber-shoe factory. Pop. 15,715.

Melting-point. See *Fusing-point.*

Melton-Mowbray (mel'tun mō'brā), a town of England, county of and 14 miles northeast of the town of Leicester, on the Eye or Wreak. It has a considerable trade in pork pies and Stilton cheese. Pop. (1911) 9203.

Melun (mė-lůn), a town of France, capital of the department of Seine-et-Marne, 27 miles southeast of Paris. It is regularly built, and has handsome quays and fine promenades. Pop. (1906) 11,219.

Melville (mel'vil), ANDREW, a Scottish reformer, born near Montrose in 1545; died at Sedan in 1622. He was educated at St. Andrew's; studied at the University of Paris, 1564-66; became a professor at Poitiers, and afterwards at Geneva: returned to Scotland in 1574, where he was appointed successively principal of Glasgow and of St. Andrew's universities. In 1582 he presented a petition to King James against the undue interference of the court in ecclesiastical affairs, for which he only escaped imprisonment by going into England. Returning in 1585 he resumed his duties at St. Andrew's, and became moderator of the General Assembly in 1587, 1589, 1594. In 1606 he was summoned to London by the king to confer on church matters, but because of his outspokenness he was committed to the Tower, and there remained until 1611. He then retired to France, and became professor in the University of Sedan.

Melville, GEORGE WALLACE, naval officer, born at New York in 1841. He entered the United States navy in 1861, rising through the various grades to that of chief of the Bureau of Steam Engineering. He engaged in Arctic discovery as a member of the *Jeannette* expedition of 1878, and the Hall and Greely relief expeditions, and headed the expedition which recovered the remains of the *Jeannette* party. He was appointed rear-admiral in 1899, retired in 1903, and has since been engaged as an engineer in Philadelphia, and has invented an important method of gearing the turbine engine as to reduce the speed of the propeller. He died March 17, 1912.

Melville, VISCOUNT. See *Dundas.*

Melville Island. 1. An island in the Polar Sea, north of America. Captain Parry discovered it, and passed the winter of 1819-20 there.—2. An island off the north coast of Australia; area, about 1800 square miles.

Membrane (mem'brān), in anatomy, a texture of the animal body, arranged in the form of laminæ, which covers organs, lines the interior of cavities, or takes part in the formation of the walls of canals or tubes. Membrane is generally divided into three kinds, mucous, serous, and fibrous. The lining of the nose, trachea, œsophagus, stomach, intestines, is of the first kind: the serous membranes form the lining of the sacs or closed cavities, as of the chest, abdomen, etc.; the fibrous membranes are

tough, inelastic, and tendinous, such as the dura mater, the pericardium and the capsules of joints.

Memel (mā'mel), a Baltic seaport in Prussia, at the north end of and near the entrance to the Kurisches Haff, 75 miles northeast of Königsberg. It has various manufacturing and other industries, but the great source of its prosperity is its trade, which is very extensive, and consists chiefly of timber, corn, flax, hemp, potash, linseed and colonial produce. Pop. (1905) 20,687.

Memling (mem'ling), or MEMLINC, HANS, a distinguished Flemish painter, born probably about 1430; died probably in 1495. He lived at Bruges, of which town he was a prosperous citizen, but little is known of his life. He was especially famous as a religious painter, and his works display a singular tenderness, ideality, and elevation. They are generally extremely well preserved.

Memmingen (mem'ing-en), a town of Bavaria, on the Aach, 41 miles southwest of Augsburg. Pop. (1905) 11,618.

Memnon (mem'non), a mythological personage mentioned in the Homeric poems as the beautiful son of Eōs (the morning), and in the post-Homeric accounts as the son of Tithōnus and nephew of Priam, whom he assisted at the siege of Troy. He slew Antilochus, but was himself slain by Achilles. His mother was filled with grief at his death, which Zeus endeavored to soothe by making her son immortal. The name of Memnon was afterwards connected with Egypt, where it was given to a statue still standing at Thebes, being one of two known from their size as 'the Colossi.' This statue, known as 'the vocal Memnon,' was celebrated in antiquity as emitting a sound every morning at the rising of the sun—perhaps through the craft of the priests, though some think it was owing to expansion caused by heat. Both statues seem originally to have been about 70 feet high.

Memorial Day. See *Decoration Day.*

Memory (mem'u-ri), the power or the capacity of having what was once present to the senses or the understanding suggested again to the mind, accompanied by a distinct consciousness that it has formerly been present to it; or the faculty of the mind by which it retains the knowledge of past events, or ideas which are past. The word *memory* is not employed uniformly in the same precise sense, but it always expresses some modification of that faculty which enables us to treasure up and preserve for future use the knowledge which we acquire; a faculty which is obviously the great foundation of all intellectual improvement. The word *memory* is sometimes used to express a capacity of retaining knowledge, and sometimes a power of recalling it to our thoughts when we have occasion to apply it to use, the latter being more correctly called *recollection.* See *Mnemonics.*

Memphis (mem'fis), an ancient city of Egypt, on the left bank of the Nile, some 20 miles south of Cairo, said to have been founded by Menes, the first king of Egypt. It was a large, rich and splendid city, and after the fall of Thebes became the capital of Egypt. At the time of the conquest of Egypt by Cambyses (524 B.C.) it was the chief commercial center of the country, and was connected by canals with the Lakes of Mœris and Mareotis. With the rise of Alexandria the importance of Memphis declined, and it was finally destroyed by the Arabs in the seventh century. The pyramids of Sakkara and the colossal statue of Rameses II, now mutilated and thrown down, are the chief objects of antiquarian interest on the site.

Memphis, a city and port of Tennessee, capital of Shelby Co., on the Mississippi, just below the junction of Wolf River, 209 miles W. S. W. of Nashville. It stands upon a bluff about 30 feet above the river in its highest floods, and is fronted by a fine esplanade. Its rapid growth is due to its favorable position for trade, which is largely carried on by rail and river, chiefly in cotton. The river is here deep enough to float the largest vessels and the shipping trade is very large, this city being the leading interior cotton mart of the United States, also a large producer of cottonseed-oil and oil products. It is also a large lumber market and has extensive manufactures. The river here is crossed by a magnificent iron railroad bridge. The city has various interesting institutions, educational and others. Pop. 131,105.

Menado (mā-nä'dō), the capital of a Dutch residency of same name in the northeast peninsula of Celebes. The town itself has a population of about 6000, while the inhabitants of the whole territory number about 500,000.

Ménage (mā-näzh), GILLES, a French man of letters, born in 1613 at Angers; died in 1692. After finishing his early studies he was admitted as an advocate, but, disgusted with that profession, he entered the church, and through the favor of Cardinal de Retz and Mazarin obtained several benefices. From this time he dedicated himself solely to lit-

erary pursuits. His principal works are *Dictionnaire Etymologique, ou Origines de la Langue Française; Origines de la Langue Italienne; Miscellanea*, a collection of pieces in prose and verse.

Menai Strait (men'ā), a strait about ½ mile across, between the island of Anglesea and the coast of Wales. For the bridges over it see *Bridge*.

Menam (mā-näm'), the chief river of Siam, rising in the Laos country, and flowing generally southward to enter the Gulf of Siam below Bangkok; length, about 900 miles.

Menander (me-nan'dėr), a Greek writer of the new comedy, born at Athens in 324 B.C; died in B.C. 291. He was the pupil of Theophrastus, an intimate friend of Epicurus, and wrote comedies to the number of 100, of which only a few fragments remain. Terence's comedies were adapted from Menander.

Mencius (men'shi-us), the Latinized name of Meng-tse, a Chinese teacher, who was born about 370 B.C., and died about 288 B.C. He was educated by his mother with such success that the approbation contained in the phrase 'the mother of Meng' has become proverbial. Mencius was one of the greatest of the early Confucians.

Men'daites. See *Christians of St. John*.

Menasha (mē-nash'à), a city of Winnebago Co., Wisconsin, at the north end of Winnebago Lake, and on the government canal, 98 miles N. N. W. of Milwaukee. There is here abundant water-power, utilized in the manufacture of iron and wooden wares, paper, woolen goods and flour, also in tanneries, pulley works, etc. Pop. 6081.

Mendeleeff (men'de-le-ef), DMITRI IVANOVICH, a distinguished Russian chemist; born at Tobolsk in 1834; died in 1907. He became professor of chemistry in the University of St. Petersburg in 1866. Of his many discoveries the most notable is his periodic law of atomic weights, one of the leading modern chemical theories.

Mendelssohn (men'delz-zōn), MOSES, a German philosopher, born of Jewish parents in 1729; died in 1786. He studied hard under adverse circumstances to acquire a knowledge of Jewish and modern literature; became bookkeeper to a Jewish silk manufacturer and tutor to his family. In 1754 he formed a friendship with Lessing, who made him the hero of his *Nathan the Wise*, while he in turn defended his friend from the attacks of Jacobi, who accused Lessing of being a Spinozist. The chief works of Mendelssohn are a treatise on metaphysics; *Phædon*, a dialogue on immortality (1767); *Jerusalem* (1783); and *Morgenstunden* (1785).

Mendelssohn-Bartholdy (men'dels-sōn bar-tol'dē), FELIX, distinguished composer, born at Hamburg in 1809; died at Leipzig in 1847. He was the son of a wealthy Jew, who, recognizing his son's talent for music, had him carefully trained. In his ninth year he publicly appeared in Berlin as a musician, and in his sixteenth year he produced the well-known overture to the *Midsummer Night's Dream*. In 1829 he began an extensive tour through England, Scotland, France, Italy, and on his return to Germany he became musical director in Düsseldorf. Here he tried to establish a theater, but without success; and when he left that city in 1835 he became conductor of the famous concerts in the Gewandhaus of Leipzig—a position which he maintained with several slight interruptions until his death. In 1841 he was appointed musical director to the King of Saxony; was afterwards summoned to Berlin by the King of Prussia to become director of music at the Academy of Arts; and journeyed repeatedly to England, where he conducted his own music at London and Birmingham. Of his musical compositions the best known are the oratorios *Elijah* and *St. Paul;* the overture to *Ruy Blas;* and his *Songs Without Words*. He left unfinished the oratorio of *Christus* and the opera of *Lorlei*.

Mendès (men-dez), CATULLE, a French poet, born at Bordeaux in 1840. His lyrical drama, *Le Roman d'une Nuit*, led to his imprisonment. Other notable poems are *Hesperus* and *Le Soleil de Minuit*. He wrote several novels and plays, the latter including *Le Capataine Fracasse*, *Le Chatiment* and *Fiamette*. He died in 1909.

Mendicant Orders. See *Orders (Religious)*.

Mendip Hills (men'dip), a range of hills in England, in Somersetshire, attaining an altitude of 1067 feet.

Mendoza (men-dō'tha), DON DIEGO HURTADO DE, a Spanish author, general and politician, born in 1503; died in 1575. He wrote an account of the Moorish insurrection in the Alpujarras Mountains, but is best known by his comic romance, the *Life of Lazarillo de Tormes*, the first of a class of novels descriptive of the life of clever rogues.

Mendoza, a province of the Argentine Republic, on the eastern side of the Andes; area, about 54,000 sq.

miles. The country is volcanic, the soil fertile but requiring irrigation; chief products, corn, wine and fruits. Pop. 141,431.—The capital, which has the same name, is situated about 2891 feet above the sea at the foot of the Cordilleras. It was almost totally destroyed by an earthquake in 1861, over 13,000 lives being lost, but has been rebuilt, and has now about 30,000 inhabitants.

Menelaus (men-e-lā'us), in Greek mythology, son of Atreus, brother of Agamemnon, and husband of the beauteous Helen, with whom he received the kingdom of Sparta or Lacedæmon. His wife having been abducted by Paris, son of Priam, king of Troy, he summoned the Greek princes to avenge the affront, and himself led sixty ships to the siege of Troy. After its conquest he returned with Helen to his native land in a devious voyage which led him to Cypria, Phœnicia, Egypt and Libya during a period of eight years.

Menelik II (men'e-lik), King of Abyssinia, was born in 1843, and succeeded John II in 1889. During his reign he defeated the Italian invaders of his country and welcomed civilizing influences. He died in 1910.

Menes (me'nēz), or Mena, according to Egyptian traditions, the first king of Egypt. See *Egypt*.

Mengs (mengz), Anton Rafael, historical painter, born in 1728; died in 1779. He was the son of a Danish artist settled in Dresden, by whom he was trained in art, and taken to Rome, where he studied the works of Michael Angelo and Raphael. On his return to Dresden the king appointed him principal court painter. He painted also at Rome, and at the court of Charles III of Spain. In 1773 he executed at Rome the *Apotheosis of Trajan* in fresco, his finest work.

Menhaden (men-hå'den), an American salt-water fish (*Alōsa menhāden*). It belongs to the family Clupeidæ, or herrings. It yields quantities of oil, the refuse being used as manure. It is also preserved in the same way as the sardine. Menhaden fishing has done almost irreparable damage to all other kinds of fishing—especially the game food fishes along the Jersey coast—by depriving them of one of their chief supplies of food. It is carried on from Maine to Florida.

Meningitis (men-in-jī'tis), the term applied to inflammation of the two inner membranes (*meninges*) which envelop the brain—the *arachnoid membrane* and the *pia mater*. There are two forms of this disease, called *simple* and *tubercular*. The former may be caused by injuries of the head, exposure to cold or heat, disease of the ear, etc., and the symptoms are pain in the head, giddiness, feverishness, and often vomiting; while the latter is frequently due to a scrofulous taint, and is also called *acute hydrocephalus*, or water in the head.

Menis'cus. See *Lens*.

Menispermaceæ (men-i-spėr-mā'-se-ē), an extensive nat. order of exogenous plants, consisting of twining, often scrambling and slender, shrubby plants, with alternate leaves without stipules, and small greenish or white unisexual flowers. They are common in the tropical parts of Asia and America, and are usually bitter and tonic plants, the seeds of some of them having narcotic properties. One species yields cocculus indicus.

Menno (men'ō), Simons, the founder of the sect known as the Mennonites, was born in Friesland in 1496; died in 1561. He was educated for the church and became a Roman Catholic priest; but about 1530 he joined the Anabaptists. After the suppression of the disturbances at Münster Menno collected the scattered remnants of the sect, inculcated in them more moderate views, and for many years in Holland and the north of Germany, as far as Livonia, labored to increase the number of his followers, and to disseminate his doctrines. There are a number of congregations in Holland, Germany and Russia. These do not believe in original sin, and object to taking oaths, making war, or going to law. The Mennonites in the United States number about 55,000.

Menobranchus (men-o-bran'kus), a genus of tailed amphibians, allied in structure to the eft or newt, found in lakes and streams of North America.

Menominee (mē-nom'i-nē), a city, capital of Menominee Co., Michigan, on Green Bay, at the mouth of the Menominee River, 50 miles S. by W. of Escanaba. Here are extensive lumber works, the mills having an annual capacity of 275,000,000 feet. There are also large iron and steel works, beet-sugar factory and other industries. The trade in lumber products is extensive. Pop. 10,507.

Menomonie (mē-nom'o-nē), a city, capital of Dunn Co., Wisconsin, 25 miles W. by N. of Eau Claire, on Red Cedar River. Has brick yards, flour and barley mills, and a shipping trade in cattle, hogs, sheep and mill products. Pop. 5036.

Menopome (men'o-pōm), MENOPO'MA, a tailed amphibian (*Menopōma alleganiense*), peculiar to the fresh waters of North America, which seems to form a connecting link between the perennibranchiate amphibians and the salamander.

Menschikoff (men'shi-kof), ALEXANDER DANILOVITCH, a Russian minister, born at Moscow in 1672; died in 1729. He was born in humble life, but ultimately became a prince of the empire and first favorite with Peter the Great. When that monarch died his power, under Catherine I, was greatly increased. After two years she was succeeded by her grandson, Peter II, who came under the guardianship of Menschikoff, and to whom he endeavored to marry his daughter. His designs, however, were frustrated by the combined efforts of the Dolgorukis and the young czar, and Menschikoff was exiled to Siberia, where he died.—ALEXANDER SERGEIEVICH MENSCHIKOFF, great-grandson of the above, born in 1787; died in 1869; was both a general and a diplomatist, and in 1854 was made commander-in-chief during the Crimean war. He suffered defeat at the Alma and Inkerman; defended Sebastopol, but after its fall and the death of Nicholas he was recalled from the army, and died in retirement.

Menstruation (men-strö-a'shun), or MENSES, the periodical discharge of blood from the generative organs of the human female. The period at which menstruation begins is usually between the 14th and 16th year; it recurs at monthly intervals, lasting for four to six days, and thus continues until from the 45th to the 50th year; the discharge at each period is from 6 to 8 oz. All these conditions, however, vary with each individual. A discontinuance of this discharge is one of the first signs of conception, and the cessation usually continues during the period of pregnancy and lactation.

Mensuration (men-sų-rā'shun) is the practical application of the simpler processes of mathematics to the measurement of the area of a plane figure, or the volume of a solid, the result being expressed in square or cubic inches, feet, yards, etc. The area of any plane rectilineal figure is easily found, since it can always be divided into a certain number of triangles, and the area of every triangle is equal to the base multiplied by half the perpendicular height. If the figure is a parallelogram its area is equal to any side multiplied by the perpendicular distance from this side to the opposite; if a trapezium it is equal to half the sum of two opposite sides multiplied by the perpendicular distance between them. Circumference of a circle = diameter multiplied by 3.14159. Area of a circle = square of radius multiplied by 3.14159 = radius multiplied by half circumference. Volume of any rectangular solid = length, breadth and depth multiplied together.

Mental Derangement. See *Insanity.*

Mental Philosophy. See *Mind, Metaphysics, Psychology.*

Mentana (men-tä'nā), a village in Italy, province of Rome, near Tivoli, where Garibaldi met with a defeat in 1867.

Mentha (men'tha) the mint genus of plants. See *Mint.*

Menthol (men'thol), a white crystalline substance obtained from oil of peppermint, of which it smells strongly, used externally in case of nervous headache.

Mentone, in French MENTON (mäṇ-toṇ), a town in the French department Alpes-Maritimes, situated on the Mediterranean, divided into the old part, perched upon a steep hill, and the new quarter, along the shore. The climate is mild and equable, and the town has become a favorite winter health resort. Pop. 9944.

Mentor (men'tor), the faithful friend of Ulysses, who entrusted to him the care of his domestic affairs during his absence in the war against Troy. The education of the young Telemachus fell to his charge and the wise and prudent counsel which he gave the youth has given to his name its metaphorical significance.

Mentz. See *Mainz.*

Menu. See *Manu.*

Menura (men-ū'ra), a genus of insessorial birds inhabiting Australia, of which the only species known is the lyre-bird (*M. superba* or *paradisea.*) See *Lyre-bird.*

Menzaleh (men-zä'leh), a lake or lagoon in Egypt, running parallel with the Mediterranean, from which it is divided by a low-lying slip of land, from 2 to 12 miles in breadth. It receives the Pelusiac and Tantic branches of the Nile, and communicates with the sea by three openings. The Suez Canal runs along its eastern extremity.

Mephistopheles (me-fi-s-to-f'e-lez), older forms, MEPHISTOPHILUS, MEPHISTOPHILIS, the

name of a demon in the old puppet-plays, adopted and developed by Marlowe in his tragical history of Dr. Faustus; and more especially by Goethe in the first part of Faust, where he becomes the cultured personification of evil rather than the Satan of popular belief.

Meppel (mep'el), a town of Holland, province of Drenthe, with manufactures of linen and cotton fabrics, etc. Pop. 10,470.

Mequinez (mek'i-nez), a city of Morocco, 35 miles W. of Fez. It is surrounded by a dilapidated wall, and contains a handsome palace, a summer residence of the emperors of Morocco.

Meran (me-rän'), a town of Austria in the Tyrol, on the Passer near its junction with the Adije, a favorite winter health resort. Pop. 9284.

Mercantile Agency. A system by which the financial standing of business firms is gauged as accurately as possible for the benefit of those with whom they deal. Quarterly commercial ratings of all houses of any standing in all lines of business are issued as a guide to those from whom they may seek credit. Special ratings are also furnished and these agencies are a sort of clearing house for credit in the business world.

Mercantile Law. See *Commercial Law.*

Mercator (mėr-kā'tur), GERARD, geographer, born at Rupelmonde, in Flanders, in 1512; died in 1594. He studied at Louvain; became a lecturer on geography and astronomy; entered into the service of Charles V, for whom he made a celestial and a terrestrial globe; and in 1559 he retired to Duisburg as cosmographer to the Duke of Juliers. He is the author of a method of projection called by his name (see next article), the principles of which were applied practically by Edward Wright in 1599. He is also the author of *Tabulæ Geographicæ* (Cologne, 1578).

Mercator's Projection, a method of projection used in map-making in which the meridians and parallels of latitude cut each other at right angles, and are both represented by straight lines. By means of this projection seamen are enabled to steer by compass in straight lines, and not in the spiral necessitated by the other projections (see map). It is constructed as follows:—A line of any length is drawn to represent the equator. This line is divided into 36 or 18 equal parts for meridians at 10° or 20° apart, and the meridians are then drawn through these perpendicular to the equator. From a table of meridional parts take the distances of the parallels and of the tropics and Arctic circles from the equator, marking them off above and below it. Join these points, and the projection is complete.

Mercia (mer'si-a), the largest of the Anglo-Saxon kingdoms, comprehended all the middle countries of England, and was founded by Crida in 585. In 827 it was conquered by Egbert, who united the different kingdoms of England into one. After this time it was repeatedly overrun by the Danes. See *England.*

Mercury (mer'kū-ri), in mythology, the name of a Roman divinity, identified in later times with the Greek Hermēs. As representing Hermēs he was regarded as the son of Jupiter and Maia, and was looked upon as the god of eloquence, of commerce and of robbers. He was also the messenger, herald, and ambassador of Jupiter. As a Roman divinity he was merely the patron of commerce and gain. See *Hermēs.*

Mercury, in astronomy, the planet nearest the sun. It moves round the sun in 87.9693 of our mean solar days, at a mean distance of 35,392,000 miles; its eccentricity of orbit is 0.205618; the inclination of its orbit to the ecliptic is 70° 0′ 8.2″; its diameter about 3050 miles. The period of its axial rotation is unknown. Its volume is about $\frac{1}{17}$ that of the earth; its density $\frac{1}{10}$ greater than the earth's. It is visible to the naked eye in spring and autumn after sunset and before sunrise. Transits of mercury over the sun's disc take place at intervals of 13, 7, 10, 3, 10, 3, etc., years.

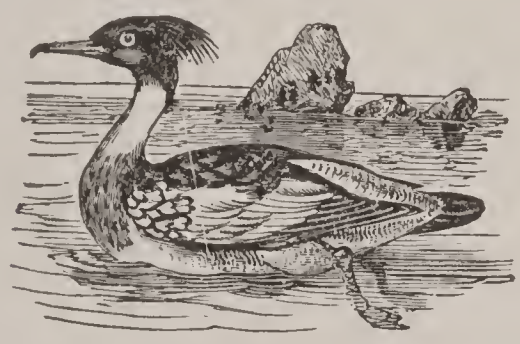
Mercury, called also quicksilver, a metal whose specific gravity is greater than that of any other metal, except platinum, gold and tungsten, being 13.56, or thirteen and a half times heavier than water. It is the only metal which is liquid at common temperatures. It freezes at a temperature of 39° or 40° below the zero of Fahrenheit, that is, at a temperature of 71° or 72° below the freezing point of water. Under a heat of 660° it rises in fumes, and is gradually converted into a red oxide. Mercury is used in barometers to ascertain the weight of the atmosphere, and in thermometers to determine the temperature of the air, for which purpose it is well adapted by its expansibility, and the extensive range between its freezing and boiling points. Preparations of this metal are among the most powerful poisons, and are extensively used as medicines. The preparation called calo-

mel or mercurous chloride (HgCl) is a most efficacious deobstruent. Another valuable preparation is corrosive or mercuric chloride ($HgCl_2$). From the fluid state in which mercury exists it readily combines with most of the metals, to which, if in sufficient quantity, it imparts a degree of fusibility or softness. An alloy of mercury and any other metal is termed an *amalgam*, amalgams being largely employed in the processes of silvering and gilding. Mercury is chiefly found in the state of sulphide, but it is also found native. The chief mines of mercury are in Spain, but it is also found in Germany, Italy, China, California, Borneo, Mexico and Peru.

Mercy, SISTERS OF, the name given to members of Roman Catholic religious communities of women, founded for the purpose of nursing the sick at their own homes, visiting prisoners, attending lying-in hospitals, superintending the education of females, and the performance of similar works of charity and mercy. Communities of Sisters of Mercy are now widely distributed over Europe and America. The Anglican Church also has an order of Sisters of Mercy.

Meredith (mėr'e-dith), GEORGE, poet and novelist, born in 1828 in Hampshire; educated in Germany; studied for the law, but essayed a literary career with a volume of poems in 1851. Among those that followed are the *Shaving of Shagpat* (1855); *The Ordeal of Richard Feverel* (1859); *Evan Harrington* (1861); *Poems and Ballads* (1862); *Rhoda Fleming* (1865); *The Egoist* (1879); *Diana of the Crossways* (1885); *One of Our Conquerors* (1891); *Lord Ormont and His Aminta* (1894), etc. He died in 1909.

Merganser (mėr-gan'sėr), a genus of aquatic birds belonging to the duck family. The goosander (*Mergus Merganser*) forms the typical European species; that of the North American continent is the hooded merganser (*M. cucultatus*). They inhabit lakes and the sea coast, migrate southward in winter, lay from eight to fourteen eggs, and are gregarious in habit.



Red-breasted Merganser (*Mergus serrātor*).

Mergenthaler (mer'gen-tā-lėr), OTTMAR, inventor, born at Würtemburg, Germany, in 1854; died in 1899. He came to the United States in boyhood and experimented for years in the invention of a type-setting machine. In 1886 he completed the linotype machine, an invention which has revolutionized the art of the printer, and very greatly decreased the cost of printed matter.

Mergui (mer-gē'), the principal town of the district of same name in British Burmah, on an island in the delta of the Tenasserim River, close to where it falls into the Bay of Bengal. The harbor is good, and the modern town occupies a low range of hills rising from the river. Pop. 11,987.

Mergui Archipelago (mer-gē'), a chain of islands in the Indian Ocean, off the coast of Tenasserim and Lower Siam, the more northern ones forming a part of the British district of Mergui. The inhabitants are industrious, but few in number.

Merida (mer'i-dā), a city of Spain, in the province and 30 miles east of Badajoz, on the right bank of the Guadiana, here spanned by a Roman bridge of eighty-one arches, built by Trajan. Other Roman remains are the arch of Santiago; the temple of Diana, now built into a dwelling-house; the theater, which is almost perfect; the amphitheater, the circus, the great aqueduct, etc. Merida was the capital of Lusitania for several centuries. Pop. (1900) 11,168.

Merida, the capital of Yucatan, in Mexico, is situated about 25 miles from the port of Progreso, on the Mexican Gulf, with which it is connected by a railway. It has a Moorish aspect generally, and contains a number of fine squares, a cathedral, bishop's palace, government house, etc. Merida was founded in 1542. It has various manufactures. Pop. (1900) 43,630.

Merida, a town of Venezuela, capital of a state of the same name, at the foot of the Sierra Nevada. It is a well-built place, with a university. Pop. 12,018.

Meriden (mer'iden), a city of New Haven County, Connecticut, 18 miles N. E. of New Haven. It is largely engaged in the manufacture of iron castings, tinware, cutlery, brasswork, glass, woolen goods, plated ware and other articles. The International Silver Company employs about 4000 men. It contains a State reformatory, the Curtis

Home for Orphans and Aged Women, and the Curtis Memorial Library. Pop. 32,066.

Meridian (mėr-id'i-an), one of the innumerable imaginary lines on the surface of the earth that may be conceived as passing through both poles and through any other given place, and serving to settle the longitude of places and thus to mark their exact position. There are also corresponding lines called *astronomical* or *celestial meridians*, which are imaginary circles of the celestial sphere passing through the poles of the heavens and the zenith of any place on the earth's surface. Every place on the globe has its meridian, and when the sun arrives at this line it is noon or mid-day, whence the name (Latin *meridianus*—*medius*, middle, and *dies*, day). The longitude of a place is its distance—usually stated in degrees, minutes and seconds—east or west of any meridian selected as a starting point, just as its latitude is the distance north or south of the equator. In Britain it has long been the custom to count from the meridian of Greenwich as a starting point; this meridian being called the first meridian, and the longitude of Greenwich being marked 0, or nothing. Other countries, however, had selected their own meridian, with the result that confusion arose among geographers and navigators in localizing any given place. This difficulty was discussed at a national conference held at Washington, October, 1884, and at last Greenwich was selected as the geographical and astronomical reference meridian of the world, longitude to be reckoned east and west from this up to 180°. It was also arranged that the astronomical day should begin at midnight, January 1, 1885.

Meridian (mer-id'i-an), capital of Lauderdale County, Mississippi, 96 miles E. of Jackson, is an important railroad terminus, and the principal manufacturing center of the state, with railroad repair shops, foundries and machine shops, and manufactures of furniture, cotton oil, fertilizers, sash, blinds, etc. Here is the East Mississippi Female College and other institutions. Pop. 23,285.

Meridian Circle, a mural circle or transit circle.

Merimee (mā-rē-mā), PROSPER, a French poet and prose writer, born in 1803; died in 1870. He studied law and passed as advocate; but employed himself more with literature, and first came prominently forward in 1825 with eight comedies professedly translated from the Spanish of 'Clara Gazul.' He contributed to the *Revue de Paris* and the *Revue des Deux Mondes;* became inspector of historical monuments, in which capacity he traveled through France, and wrote several archæological works; continued to publish romantic tales, such as *Arsène Guillot*, *Carmen*, *Colomba*, etc.; was made a senator in 1853, grand officer of the Legion of Honor, 1866. Among his writings were *The History of Don Pedro I, of Castille* (1848); *Poetry of Modern Greece* (1855); *Lettres à une Inconnue* (1873); *Travels* in various parts of France, etc.

Merino (me-rē'nō), a twilled woolen tissue, dyed in various colors, and often also printed. In the better kind of goods both the warp and the woof are of carded woolen yarn, but in inferior sorts the warp is of cotton. The French fabrics are held in the highest estimation.

Merino Sheep, a variety of sheep originally peculiar to Spain, but now reared largely in other parts of Europe, in Australia, New Zealand, United States, etc. They are raised chiefly for the sake of their long fine wool, the mutton being but little esteemed.

Merioneth (mer-i-on'eth), or MERIONETHSHIRE, a maritime county in North Wales, bounded by Carnarvonshire, Denbighshire, Montgomeryshire, Cardiganshire, and by Cardigan Bay; area, 668 square miles. The coast line is broken and rugged; the surface of the county mountainous, the highest point being Aran Mowddwy (2970 feet). The principal minerals are lead, copper, and slates; in 1887 extensive gold-mining operations were begun in the Mawddach valley. The soil is for the most part poor, oats being the chief grain crop; cattle, sheep, and small hardy ponies are reared. Chief town, Dolgelly. Pop. (1911) 45,573.

Merivale (mėr'i-vāl), CHARLES, an English historian, born about 1805; was educated at Harrow, Haileybury and Cambridge, where he had a distinguished career. He was rector of Lawford, Essex, 1848-69, then became dean of Ely. He wrote *History of Rome*, *Early Church History*, *Boyle Lectures*, etc. He died in 1893.—HERMAN MERIVALE, his brother (1805-1894), was professor of political economy at Oxford, and permanent under-secretary of State for India; author of *Historical Studies*, etc. —His son, HERMAN CHARLES (born in 1839; died in 1906), was an active writer of plays, poems, etc., some of his plays being, *All for Her*, *The White Pilgrim* and *Forget Me Not*.

Merle. See *Blackbird.*

Merle d'Aubigne (merl dō-bēn-yā), JEAN HENRI, historian and theologian, born at Geneva, in 1794; died in 1872. His education, commenced at Geneva, was completed at Berlin. He became pastor at Hamburg to a French congregation; and removed afterwards to Brussels. Returning to his native city in 1830, he became professor of church history in the theological school founded by the Genevan Evangelical Society. Besides his well-known *History of the Reformation in the Sixteenth Century* (1835-53), he published a supplementary history to the time of Calvin (Paris, 1862-68); *The Protector* (Cromwell), 1847; and the *Recollections of a Swiss Minister.*

Merlin (mėr'lin), a legendary Welsh prophet and magician, who is claimed to have lived in the fifth century; to have been the offspring of a demon and a Welsh princess, and to have served as adviser to the English kings Vortigern, Ambrosius, Utherpendragon and Arthur. There was also a prophet connected with the ancient kingdom of Strathclyde called Merlin the Wild, or Merlinus Caledonius, who is said to have lived in the sixth century. His prophecies, containing also those ascribed to the Welsh Merlin, were published at Edinburgh in 1615.

Mermaid's-glove, a name given to the largest of British sponges (*Halichondria palmata*), from its tendency to branch into a form bearing a remote resemblance to a glove with extended fingers. It sometimes attains a height of 2 feet.

Meroe (mer'ō-ā), a city and State of ancient Ethiopia, in the northeastern part of Africa, corresponding mainly with the district between the Nile and Atbara, north of Abyssinia. Meroë was the center of the caravan trade between Ethiopia, Egypt, Arabia, Northern Africa and India. There are pyramids at the site of ancient Meroë and a small town of same name on the Nile.

Merops (mer'opz), the bee-eaters, a genus of birds forming the type of the family Meropidæ. See *Bee-eaters.*

Merovingians (mer-o-vin'ji-anz), the first dynasty of Frankish kings which ruled in the northern part of Gaul from 496 to 752, when they were supplanted by the Carlovingians.

Merrill, a city, capital of Lincoln County, Wisconsin, 18 miles N. by W. of Wausau. It is in a hardwood timber district, and has a lumber boom with a capacity for 100,000,000 feet of logs. Doors, sash, blinds, shingles, etc., are largely manufactured. Pop. 8689.

Merrimac (mer'i-mak), a river of the United States in New Hampshire and Massachusetts. The immense water-power furnished by its falls has created the towns of Lowell and Lawrence in Massachusetts, and of Nashua and Manchester in New Hampshire.

Merrimac, the name of one of the earliest iron-clad warships, which took part in the memorable battle of the *Monitor* and *Merrimac*, in Hampton Roads in 1862. Originally a frigate of the United States navy, it was sunk in Norfolk harbor at the beginning of the Civil war, and subsequently raised by the Confederates and plated with bars of 3-inch cast-iron.

Merritt (mer'it), WESLEY, soldier, born in New York, in 1836; was graduated at West Point in 1860. He entered the Civil war, was a cavalry captain in 1862, and at Gettysburg commanded the Reserve Cavalry Brigade. In 1864 he commanded a division under Sheridan, being in every battle of that campaign. He served as superintendent of the United States Military Academy, 1882-87, was promoted major-general in 1895, and in 1898 was commander of the land forces in the Philippines, capturing Manila, August 13, with the aid of Admiral Dewey. He was retired on age limit in 1900.

Mersey (mer'zi), an important river of England, has its origin in several streams which flow from the Pennine Moors and expands into an estuary 17 miles from its mouth at Runcorn, its entire length being 60 miles. The Manchester Ship Canal comprises part of the channel of the Mersey.

Merthyr-Tydvil (mer'ther tid'vil), or TYDFIL, a parliamentary borough of South Wales, county of Glamorgan, 24 miles N. N. W. of Cardiff, on the Taff. It has risen up from a mere village in 1780 to a place of great extent and importance, owing its prosperity to its situation near the center of the valuable coal and mineral field of South Wales. The shipping ports are Swansea and Cardic. Pop. 143,880.

Merv, an oasis in Central Asia, north of Afghanistan, the principal seat of the Teke-Turcomans, who from this center used to make predatory incursions into Persia and Afghanistan. In 1815 the oasis was subjugated by the Khan of Khiva, to whom it remained tributary for about twenty years. Sub-

sequently Persia attempted to make good the claims which it had long laid to this district, and in 1860 fitted out an expedition for the purpose, which, however, miscarried completely. In 1881 General Skobeleff led a Russian expedition against the Teke-Turcomans, captured their stronghold of Geok Tepe, and received the submission of the people of Merv. The Russians, who are rapidly extending the area of cultivation by means of irrigation, maintain a body of troops here, and have made it the administrative center of the Penjdeh district, a small town having sprung up.

Mesa (mē'sa), an elevation with level surface, more especially a table-land of small extent rising abruptly from a surrounding plain; a term frequently used in that part of the United States bordering on Mexico.

Mescal Button
(*Lophophora Williamsii*).

Mescal - Buttons (mes-kăl' but'nz). The dried tops of a succulent, spineless turnip-shaped cactus growing in the arid regions of Texas and Northern Mexico called locally *peyote, hikuli,* and *wokowi.* The plant rises but a short distance from the ground and has a flat top with a number of radiating convex ribs. The tops of the plants are collected by the Indians and dried, forming button-like masses about an inch in diameter and a quarter of an inch thick, which have narcotic properties. They are called *dry whisky* in Texas, and are either chewed dry or added to alcoholic drinks, producing a delirious intoxication somewhat resembling the effect of opium or of Indian hemp.

Mesembryan'themum. See *Ice-plant.*

Mesentery (mes'en-te-ri), a membrane in the cavity of the abdomen attached to the lumbar vertebræ posteriorly and to the intestines anteriorly. It is formed of a duplicature of the peritoneum, and contains adipose matter, lacteals, mesenteric glands, lymphatics and mesenteric arteries, veins and nerves. Its use is to retain the intestines in a proper position, to support vessels, etc.

Meshed (mesh-hed'), a town of north-eastern Persia, capital of the province of Khorasan, 500 miles north-east of Ispahan. It contains the shrine of Imam Ruza, and is the sacred city of the great Mohammedan sect of the Shiites. The chief manufactures are velvets, sword blades, some silk and cotton goods, and turquoise jewelry. Its situation makes it an important entrepôt of trade. Pop. about 70,000.

Mesmer (mes'mer), Friedrich Anton, a German physician, founder of the doctrine of mesmerism or animal magnetism, was born in 1733; died in 1815. He professed to cure diseases by stroking with magnets, but about 1776 he renounced their use, and declared that his operations were conducted solely by means of the magnetism peculiar to animal bodies. (See *Mesmerism.*) He went to Paris in 1778, where he achieved considerable success and fame and made many converts to his views, but was regarded by the medical faculty as a charlatan. The government at length appointed a committee of physicians and members of the Academy of Sciences to investigate his pretensions. The report was unfavorable, and the system fell for the time into disrepute. Mesmer retired to Suabia, where he died.

Mesmerism (mes'mêr-izm), Animal Magnetism (*electrobiology, hypnotism*), terms applied to certain peculiar nervous conditions which may be artificially induced, and in which the mind and body of one individual may be peculiarly influenced by another apparently independent of his own will. The term mesmerism is derived from Mesmer (see preceding article), who professed to produce these conditions in others and to cure diseases by the influence of a mysterious occult force residing in himself. This force he called animal magnetism. He held that it pervaded the whole universe, and specially affected the nervous system. The phenomena were known from the earliest stage, when the priests of most of the ancient civilizations affected to cure diseases by the touch of the hand, or threw people into deep sleeps, induced dreams, and produced many of the effects now referred to mesmerism. While the phenomena which Mesmer professed to produce were probably in many cases genuine, his theory of animal magnetism rested on no proper scientific basis. He has been followed by many disciples, whose success in producing the mesmeric condition has left no

doubt as to the reality of many of the phenomena of mesmerism; but modern scientific investigation, while not fully explaining all these, has shown that they are due to peculiar nervous conditions, and that it is unnecessary to presuppose any occult force to account for them. The means usually employed to produce the mesmeric condition are such as touching and stroking with the hands, according to rule (manipulation), breathing on the person, fixing the eyes on him, etc. It may also be produced by causing the patient to stare at an object, especially a bright one, placed in such a position as to strain the eye, the effect being completed by a few passes of the hand over the face without touching it. In the condition thus induced the patient seems to be in a kind of sleep. The limbs will remain in any position in which they may be placed. By stroking the surface of the body the muscles adjacent may be rendered rigid as in a person suffering from catalepsy. Reason and memory are temporarily suspended, the will is paralyzed and the subject is irresistibly impelled to act in accordance with suggestion, however absurd. He can be persuaded into any hallucination, such as that he is someone other than himself, or that he hears or sees, smells or tastes something which has no existence before him. As a therapeutic agent mesmerism has been successfully employed in certain forms of disease, especially in cases of nervous irritation and sleeplessness, and such diseases in general as have a nervous origin. It has been claimed also by professors of the art that the patient when in this condition can determine the nature of any disease from which he may be suffering and the means of its cure, that he can penetrate the mysteries of the future and hold communication with distant persons. But these last statements cannot be regarded as authenticated.

Many theories similar to that of Mesmer have been propounded to account for these phenomena, *e. g.*, that of the Baron von Reichenbach of the existence of an 'influence' developed by certain crystals, the human body, etc., existing throughout the universe, which he called *odyl;* that of electro-biology, which attributes them to electric currents in the human body; and the theories of spiritualism and clairvoyance, which attribute them to spiritual influences. The first step towards scientific investigation of them was taken by James Braid, a surgeon in Manchester, who attempted a physiological explanation of them in a paper read before the British Association at Manchester in 1842, and in a work published in 1843 entitled *Neurypnology.* To him we owe the term hypnotism (Greek *hypnos*, sleep). Scientific investigation has since been devoted to the subject to a considerable extent, and much has been learned concerning it. The phenomena seem in many cases to be a result of suggestion, the ideas implanted in the minds of those under its influence being remarkably persistent, even when very inconsistent with the normal thoughts. The study of mesmerism is still being actively prosecuted.

Mesne (mēn), in law, middle or intervening. *Mesne process* is defined by Wharton as 'all those writs which intervene in the progress of a suit or action between its beginning and end, as contradistinguished from primary and final process.'

Mesopotamia (mes-ō-pō′tā-mi-a), a name given by the Greeks to the extensive region inclosed by the Tigris and Euphrates, anciently associated with the Assyrian and Babylonian monarchies, and densely peopled. Its Old Testament name is *Aram Naharaim*, or *Padan Aram.* The Greek title was probably not in use until after Alexander the Great invaded the East. This country is inhabited chiefly by Arabs, Kurds and Armenians, its population having very greatly decreased. Many of them are nomadic, and their chief occupation is the grazing of cattle. Mesopotamia is now part of the Turkish Empire.

Mesothorax (mes-u-thor′aks), in entomology, the middle rising of the thorax.

Mesozoic Period (mes-u-zō′ik; from Gr. *mesos*, middle, and *zoē*, *life*), the term applied by geologists to the geological period be-

Cretaceous Dinosaur (*Iguanodon*).

tween the Palæozoic and the Cainozoic. It is coextensive with the secondary for-

mations, and includes the rocks of the Triassic, Oölitic and Cretaceous groups.

Mespilus (mes′pi-lus), the medlar, a genus of trees.

Mesquite (mes′kit; *Prosōpis glandulōsa*), a small tree allied to the acacia, common in Mexico, Texas, and other parts of western North America. It yields a gum not much inferior to gum arabic; its seeds are eaten, and a drink is prepared from the mucilage of its pods. Another species (*P. pubescens*) has pods that are eaten by the Indians, being rich in saccharine matter. They are of a twisted form, hence the name 'screw bean.'

Mess, in sea language, denotes a particular company of the officers or crew of a ship, who eat, drink and associate together; in military language, a sort of military ordinary, established and regulated by the rules of the service, for all the officers in a regiment, and supported by their joint subscriptions, supplemented by a small government allowance. Similar institutions are extended to the non-commissioned officers of a regiment, but the technical meaning of messing as applied to officers does not hold with regard to common seamen and soldiers.

Messalina (mes-a-lē′na), VALERIA, the third wife of the Roman emperor Claudius. She is notorious in history on account of her licentiousness and cruelty. She was murdered A.D. 48.

Messa′na. See *Messina.*

Messenia (mes-sē′ni-a), a country of ancient Greece, in the southern part of the Peloponnesus. Its capital was Messēnē, with the mountain fortress Ithōmē. On its southern coast lay the Messenian Gulf (now the Gulf of Coron); a ridge of Mount Taygĕtus separated it from Sparta. Messenia is celebrated for the long struggle of its inhabitants in defense of their liberty with the Lacedæmonians, with whom they waged three wars, the first extending from 743-724 B.C., the second from 685-668 B.C., and the third from 464-456 B.C. —Messenia gives name to a monarchy in modern Greece, with an area of 1221 square miles.

Messiah (me-sī′a; Greek form, *Messias;* Hebrew, *Mashiach*), corresponding to the Greek *Christos* of the New Testament, that is, 'anointed,' has in the Old Testament several applications, as to the whole Jewish people, to the priests, to the kings ('the Lord's Anointed'), and even to Gentile kings, as persons who had been anointed with holy oil. The designation, however, owes its special importance to the application of it in the prophetic books of the Old Testament to an ideal holy king and deliverer whose advent they foretold. The whole of the prophetic pictures agreed in placing Jehovah in the central place of the desired kingship. These prophecies, which are called the Messianic prophecies, had at the time of our Lord come to be applied by the Jews to a temporal king who should free them from foreign oppression. They are affirmed by Jesus Christ and His apostles to apply to and be fulfilled in him; and this is the belief of the Christian Church, by which he is called 'The Messiah.' The rationalistic school of theologians assert that Jesus laid claim to the dignity either to meet the preconceptions of his countrymen, or because he felt that the truth which he taught was the real kingdom never to be destroyed which the God of Heaven was to set up.

Messina (mes-sē′na; ancient Greek name, *Zanklē;* Latin, *Messāna*), the chief commercial town and seaport of Sicily, capital of the province and on the strait of the same name. The harbor is one of the best in the Mediterranean. The manufactures consist chiefly of silk goods. The principal exports are silks, olive oil, oranges, lemons, and other fruits; wine, salted fish, lemon juice, essences, etc. Often visited by earthquakes, and more than once ruined, it was utterly destroyed in December, 1908, with a great part of its population of 150,000, by one of great violence, which destroyed also the adjoining city of Reggio and many smaller towns.

Messina, STRAIT OF, the strait which separates Sicily from Italy. It has a length of about 20 miles, and varies in width from 2 miles in the north to 11 miles in the south, is very deep, and has a strong tidal current.

Messuage (mes′wij), in law, is the term used for a dwelling house with a piece of land attaching, as garden, orchard, etc., and all other conveniences, as out-buildings, etc., belonging to it. The term is derived from the French *mesuage.*

Mestizos (mes-tē′zōs), people of mixed origin in countries where Spanish Europeans have settled and intermingled with the natives.

Meta (mā′ta), a great river of South America, a tributary of the Orinoco, which it joins in Venezuela, though the greater part of its course is in Colombia; length 700 miles.

Metabola (me-tab′o-la; Greek, *metabolē,* change), a term applied to insects that undergo metamorphosis.

Metabolism (me-tab′ol-izm). This term is used in biology to sum up the changes which take place within the body, or in a body cell, by which the food is changed into living tissue, and on the other hand, the tissues are disorganized and prepared to be expelled from the body. Thus it signifies the sum of the constructive and destructive processes. In theology, it has to do with the change of bread and wine in the eucharist. In poetry, it signifies a change from one meter to another.

Metacarpus (met-a-kar′pus), in anatomy, the part of the hand between the wrist and the fingers. See *Hand.*

Metacenter (met-a-sen′tėr), in physics, that point in a floating body in which, when the body is disturbed from the position of equilibrium, the vertical line passing through the center of gravity of the fluid displaced (regarded as still filling the place occupied by the body) meets the line which, when the body is at rest, passes through the center of gravity of the fluid and that of the body. In order that the body may float with stability the position of the metacenter must be above that of the center of gravity.

Metagen′esis. See *Generation* (*Alternate*).

Metalloid (met′a-loid), in chemistry, a term applied to all the non-metallic elementary substances. The principal metalloids include oxygen, hydrogen, nitrogen, carbon, chlorine, bromine, iodine, fluorine, sulphur, selenium, phosphorus, boron and silicon.

Metallurgy (met′al-ėr-ji), the art of working metals, comprehending the whole process of separating them from other matters in the ore, smelting, refining, etc.

Metals (met′alz). Elementary substances have been divided by chemists into two classes, *metals* and *non-metals* or *metalloids*, but these merge one into the other by gradations so imperceptible that it is impossible to frame a definition which will not either include some non-metallic bodies or exclude some metallic. The term metal is an ideal type, and is applied to those elementary substances which in the combination of physical characteristics which they present approach more or less nearly to it. The following are the chief characteristics of metals. They are opaque, having a peculiar luster connected with their capacity called *metallic;* insoluble in water; solid, except in one instance, at ordinary temperatures; generally fusible by heat; good conductors of heat and electricity; capable, when in the state of an oxide, of uniting with acids and forming salts; and having the property, when their compounds are submitted to electrolysis, of generally appearing at the negative pole of the battery. Many of the metals are also malleable, or susceptible of being beaten or rolled out into sheets or leaves, and some of them are extremely ductile, or capable of being drawn out into wires of great fineness. They are sometimes found native or pure, but more generally combined with oxygen, sulphur, and some other elements, constituting *ores.* The great difference in the malleability of the metals gave rise to the old distinction of *metals* and *semimetals,* which is now disregarded. The following—fifty-two in number—are the elementary substances usually regarded as metals:—aluminium, antimony, barium, beryllium or glucinum, bismuth, cadmium, cæsium, calcium, cerium, chromium, cobalt, columbium or niobium, copper, didymium, erbium, gallium, germanium, gold, indium, iridium, iron, lanthanum, lead, lithium, magnesium, manganese, mercury, molybdenum, nickel, osmium, palladium, platinum, potassium, rhodium, rubidium, ruthenium, scandium, silver, sodium, strontium, tantalum, tellurium, terbium, thallium, thorium, tin, titanium, tungsten, uranium, vanadium, yttrium, zinc, zirconium. Of these gold, silver, copper, tin, lead, zinc, platinum, iron, are the most malleable—gold, which possesses the quality in the greatest degree, being capable of being beaten into leaves $\frac{1}{10000}$ of a millimeter in thickness. The following, given in the order of their ductility, are the most ductile:—platinum, silver, iron, copper, gold, aluminium, zinc, tin, lead, platinum wire having been obtained of not more than $\frac{1}{1200}$ of a millimeter in diameter. The majority of the useful metals are between seven and eight times heavier than an equal bulk of water; platinum, osmium and iridium are more than twenty times heavier; while lithium, potassium and sodium are lighter. The metals become liquid, or otherwise change their condition, at very various temperatures: platinum is hardly fusible at the highest temperature of a furnace; iron melts at a little lower temperature; and silver somewhat lower still; while potassium melts below the boiling-point of water, and becomes vapor at a red heat, and it and sodium may be molded like wax at 16° C. (61° Fahr.). Mercury is liquid at ordinary temperatures, and freezes only at 39½° C. below zero (—39° Fahr.). Osmium and tellurium are also regarded by some as non-metals. All the metals, without exception, combine with oxygen,

sulphur and chlorine, forming *oxides*, *sulphides* and *chlorides*, and many of them also combine with bromine, iodine and fluorine. Several of the later discovered metals exist in exceedingly minute quantities, and were detected only by spectrum analysis, and there is every likelihood that research in this direction will add to the present list of metals.

Metamerism (m e-t a m'ėr-izm), in chemistry, the character in certain compound bodies differing in chemical properties, of having the same chemical elements combined in the same proportion and with the same molecular weight; thus, aldehyde (C_2H_4O) and oxide of ethylene (C_2H_4O) have their elements in the same proportion and the same molecular weight, 44. Metameric bodies do not, however, belong to the same class or series of compounds. See *Isomerism*, *Polymerism*.

Metamorphic Rocks (m e t-a-mor'fik), in geology, stratified or unstratified rocks of any age whose original texture has been altered and rendered less or more crystalline by subterranean heat, pressure, or chemical agency. The name is given more especially to the lowest and azoic, or nonfossiliferous, stratified rocks, consisting of crystalline schists, and embracing granitoid schist, gneiss, quartz-rock, mica-schist and clay-slate, most of which were originally deposited from water and crystallized by subsequent agencies. They exhibit for the most part cleavage, crumpling and foliation, and their lines of stratification are often indistinct or obliterated.

Metamorphosis (m e t-a-mor'fō-sis), any change of form, shape, or structure. In ancient mythology the term is applied to the transformations of human beings into inanimate objects, with which ancient fable abounds. In zoology it includes the alterations which an animal undergoes after its exclusion from the egg or ovum, and which alter extensively the general form and life of the individual. All the changes which are undergone by a butterfly in passing from the fecundated ovum to the imago, or perfect insect, constitute its *development*—each change, from ovum to larva, from larva to pupa, and from pupa to imago, constituting a *metamorphosis*. Insects which undergo a complete metamorphosis are known as *Heteromorphous* or *Holometabolic* insects. Others, such as the grasshoppers, locusts, bugs, dragon flies, etc., undergo a less perfect series of changes, and are termed *Hemimetabolic* or *Homomorphous* insects. The occurrence of metamorphosis is by no means confined to the lowest groups of the animal series, for we find the amphibian vertebrates—as in the case of frogs, n e w t s, and their allies—exemplifying these phenomena in a very striking manner. The metamorphoses of the Annulosa, however, including the insects, crustaceans, worms, etc., are among the most marked and familiar with which we are acquainted.

Metaphor (m e t'a-f u r), a figure of speech founded on the real or ideal resemblance which one object is supposed to bear, in some respect, to another, and by which a word is transferred from an object to which it properly belongs to another in such a manner that a comparison is implied, though not formally expressed. It may be called a simile without any word expressing comparison. Thus, 'that man is a fox,' is a metaphor, but 'that man is like a fox,' is a simile. So we say, a man *bridles* his anger; beauty *awakens* love or tender passions; opposition *fires* courage.

Metaphysics (m e t-a-fiz'iks; Gr. *meta*, after, and *physica*, physics), a word first applied to a certain group of the philosophical dissertations of Aristotle which were placed in a collection of his manuscripts after his treatise on physics. As since employed, it has had various significations, and recently it has been understood as applying to the science which investigates the ultimate principles that underlie and are presupposed in all being and knowledge. In the part of the Aristotelian treatise alluded to the problems were concerned with the contemplation of being as being, and the attributes which belong to it as such. This implies that things in general must be divided into beings or things as they are, and into phenomena or things as they appear. In modern usage metaphysics is very frequently held as applying to the former division, that is, to the ultimate grounds of being. To attain this end it takes into account the correlative of being, that is, knowledge; and of knowledge not as coming within the province of logic or of mental philosophy, but as it is in relation to being or objective reality. In this respect metaphysics is synonymous with ontology. The science has also been considered as synonymous with psychology, and to denote that branch of philosophy which investigates the faculties, operations, and laws of the human mind.

Metastasio (mā-tȧs-tȧs'i-o), Pietro Buonaventura, an Italian poet, born at Assisi in 1698; died at Vienna in 1782. His true name was Trapassi, and his father was a common

workman. His poetical talents were early displayed in making rhymes and in improvisations. The lawyer Gravina, who accidentally became acquainted with his talents, took him under his protection, called him (by an Italianized translation of his name into Greek) *Metastasio*, paid great attention to his education, and on his death, in 1717, left him his whole estate. Two years afterwards, having spent his fortune, he entered a lawyer's office in Naples. There in 1722 he wrote a serenade for the birthday of the empress which brought him the favor of the Roman prima donna, Marianna Bulgarelli, called *La Romanina*. He resided with La Romanina and her husband in Rome till 1729, and during that time produced many operas, commencing with the *Didone Abbandonata* in 1724. His success was such that Charles VI invited him to Vienna in 1729, and appointed him poet laureate with a pension of 4000 guilders. Metastasio may be said to be the father of the modern Italian opera. His works, while not possessing the highest literary merit, were eminently fitted for musical effect.

Metatarsus (met-a-tar'sus), the part of the foot popularly known as the 'instep.' See *Foot*.

Metauro (me-tą'rō; anciently *Metaurus*), a river of Italy, in the Marches, which after a E. N. E. course of about 50 miles falls into the Adriatic. On its banks Hasdrubal was defeated and slain by the Romans (207 B.C.).

Metayer (me-tā'yér), a cultivator who tills the soil for a landowner on condition of receiving a share, generally a half of its produce. The *metayer system* is practiced chiefly in France and Italy, though 'farming on halves' is common in the United States.

Metazoa (met-a-zō'a), one of the two great sections into which Huxley divides the animal kingdom, the other being the Protozoa. The lowest of the Metazoa are the Porifera or sponges. That portion of the Metazoa which possess a notochord constitute the subkingdom Vertebrata; the rest are invertebrate.

Metchnikoff (mech'ni-kof), Elias, a Russian zoologist, born in Kharkoff gov. in 1841; became a professor at Odessa in 1870, and later head of the bacteriologic station. In 1890 he took up work in the Pasteur Institute, Paris, and upon Pasteur's death in 1895 became director. His theories with regard to the prolongation of life have attracted universal attention.

Metcalf (met'kaf), Victor Howard, statesman, was born at Utica, New York, in 1853. He studied in Yale Law School, and practiced law at Oakland, California, from which State he was thrice elected to Congress (1899-1904). He served in President Roosevelt's cabinet, 1904-06, as Secretary of Commerce and Labor, and 1906-08 as Secretary of the Navy.

Metempsychosis (me-temp-si-kō'-sis), transmigration; the passage of the soul from one body to another. See *Transmigration of the Soul*.

Meteor (mē'te-ur), a name originally given to any atmospheric phenomenon; it is now more usually applied to the phenomena known as shooting stars, falling stars, fireballs or bolides, aerolites, meteorolites, meteoric stones, etc. It is now generally believed that these phenomena are all of the same nature, and are due to the existence of a great number of bodies, many of them very small indeed, revolving round the sun, which, when they happen to pass through the earth's atmosphere, are heated by friction and become luminous. Under certain circumstances portions of these bodies reach the earth's surface, and these are known as meteorites or meteoric stones. These stones consist of known chemical elements. They have this peculiarity, that whereas native iron is extremely rare among terrestrial minerals it usually forms a component part, and frequently the whole, of meteorites, and is known as meteoric iron. Exceptionally large showers of meteors appear in August and November every year, and the November showers exhibit a maximum brilliancy every 33 years. As to the connection of meteors with comets see *Comets*.

Meteoric Iron. See *Iron (Native)*, and *Meteor*.

Meteoric Stones. See *Meteor*.

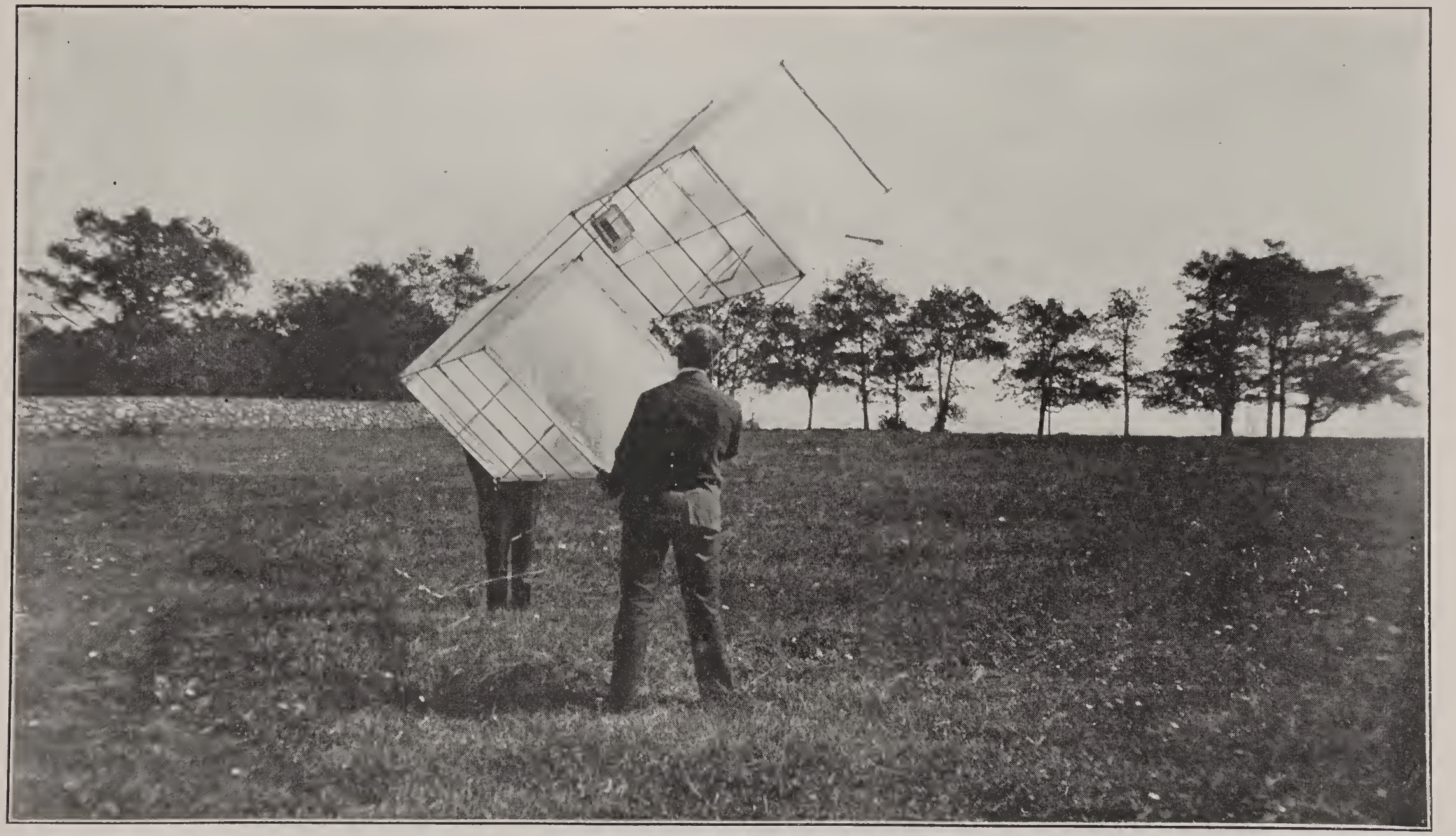
Meteorology (mē-te-or-ol'o-ji), the science or branch of knowledge that treats of atmospheric phenomena relating to weather and climate. The phenomena with which it deals and the instruments used in their observation are mainly these, viz.: temperature (thermometer), humidity (hygrometer), (anemometer), rainfall (rain-gauge), and atmospheric pressure (barometer), wind clouds. These phenomena are all referable to the action of the sun, and accordingly present variations depending upon locality (including the infinitely varied physical features of different places), the diurnal revolution of the earth upon its axis, and the annual revolution of the earth round the sun. It is the business

of meteorology to examine the laws which regulate these variations. It pursues its inquiries in two directions, (1) with reference to the variations observed at different times in the same locality with the view of obtaining average results as to its climate—climatology, and (2) with reference to the variations observed in different localities at the same time with the view of arriving at the laws which regulate the changes in the weather—weather study. In the prosecution of this study observations are taken at the same hour of Greenwich time at a number of stations situated over a large extent of the earth's surface. These observations include readings of barometer, thermometer, hygrometer, rain-gauge, anemometer, etc., with non-instrumental observation of clouds. The results which indicate the phenomena existing at that hour at the several stations are tabulated, or registered, formed into weather charts, etc. These charts are made by putting down on a map readings taken at the same moment over a large tract of country, and joining by lines the points where the readings agree. Since the general use of the electric telegraph this branch has assumed great practical importance. By its means observations made at many distant places may be immediately communicated to one center, and men of science are thus enabled to forecast with considerable accuracy the weather which may be expected in certain districts. Such forecasts can be made with great accuracy in tropical and subtropical countries where the atmospheric conditions are very constant, and variations from the average are consequently easily observed. They are attended with much more difficulty in temperate countries. In the United States, where the majority of storms rise in the district to the west of the Mississippi, and are thus capable of easy observation, great accuracy has been attained. The Weather Bureau originated in 1870, as an attachment to the Signal Service Office of the War Department. In 1891 it was transferred by law to the Department of Agriculture, its functions being closely allied to that interest. Its predictions of the coming weather (now termed 'forecasts') seldom extend beyond twenty-four to thirty-six hours in advance, and are telegraphed and published in bulletins twice daily. In the British Isles they are exceptionally difficult owing to the fact that on the side from which nearly all weather changes come, namely, the west, the existence of the Atlantic Ocean renders telegraphic warning of changes of weather impossible. The fact that a storm is traveling eastward may be telegraphed from America, but there is always a chance of its being dissipated or deflected long before it reaches the coasts of Europe. It having been observed, however, that a storm is always preceded by a fall of the barometer, the tendency to fall is observed some time before the minimum depression occurs; the notice of this tendency, together with observations of the wind and motions of cirrus clouds, are of much importance in the prediction of storms and the enabling of storm warnings to be sent out. The further eastward we travel in Europe the easier does the forecasting of the weather become. See *Cyclone*, *Anticyclone*, *Climate*, etc.,

Methane (me′thān), the chemical name for marsh-gas. See *Firedamp*.

Metheglin (me-theg'lin), a name for the liquor otherwise called *Mead*.

Methodists (meth'o-distz), a sect of Christians founded by John Wesley, so-called from the fact that the name was applied to Wesley and his companions by their fellow-students at Oxford, on account of the exact regularity of their lives, and the strictness of their observance of religious duties. The religious movement which resulted in the foundation of this sect began at Oxford in 1729, the chief leaders besides John Wesley being his brother Charles and George Whitefield (see *Wesley*, *Whitefield*). The first general conference of the Methodists was held in 1744, and the Methodists were constituted a legally corporate body in 1784. Their doctrines are substantially those of the Church of England. The appointment of a minister of the body to any place has long been for a period of a few years, but in recent practice the time is frequently extended. There are in addition to the ordained ministers lay preachers, leaders, trustees and stewards. The body is governed by an annual conference, having at its head a president and secretary, whose term of office lasts but for a year. In each district the ministers hold half-yearly meetings, the several chairmen being appointed by the conference. There are also quarterly circuit meetings of ministers and lay officers. The supreme legislative and judicial power is vested in the conference, to which the half-yearly and quarterly district and circuit meetings are subordinated. The number of members at Wesley's death was 76,968; but there are now said to be in different parts of the world above 18,000,000 adherents. Various secessions have from time to time taken place from the origi-



WEATHER BUREAU BOX KITE

The Government Weather Bureau uses large box kites carrying recording barometers, thermometers and other apparatus to ascertain weather conditions high in the air. This view shows a kite about to be sent up from an observatory.

nal body, which though differing as to points of church government generally agree as to doctrine. The Methodists are especially numerous in the United States, where they form numerically the leading Protestant denomination, numbering about 6,500,000 members. Of the several branches into which they have divided the *Methodist Episcopal Church* is the oldest and most prominent. Since 1845 it has been separated into two branches, the Methodists of the Southern States forming what is called the *Methodist Episcopal Church, South.* These two branches have a combined membership of nearly 5,000,000. There are also large numbers of colored Methodist Episcopalians, including the three branches of the *African Methodist Episcopal*, about 500,000 in membership; the *African Methodist Episcopal Zion*, 550,000; and the *Colored Methodist Episcopal*, 235,000. There are various divisions of the Church of much smaller membership, chief among these being the *Free Methodists*, organized in 1860, with about 34,000 members. The *Wesleyan Methodists* have a membership of about 20,000, the *Union American Methodist Episcopal*, 18,500, and the *Congregational Methodist*, 15,000, with several others of a few thousands each. In England the Methodists have also divided into a number of branches, chief among them being the *Calvinistic Methodists*, originating in a difference between Wesley and Whitefield concerning the Calvinistic doctrines, and now subdivided into three denominations, the *Whitefield Methodists*, the *Welsh Calvinistic Methodists*, and *Lady Huntingdon's Connection.* There are also the sects of *Bible Christians*, *Wesleyan Reform Union*, *Primitive Methodists* and the *United Methodists Free Churches.*

Methuen (me-thū'en), a town of Essex Co., Massachusetts, on the Spicket River, 2 miles N. N. W. of Lawrence. Cotton and woolen goods, boots and shoes, and some other articles are manufactured here. Pop. 11,448.

Methylated Alcohol or Spirits.

Spirits to which shellac and methylin alcohol, or wood-spirit, have been added, so as to render the mixture unpalatable. Such a mixture is allowed to be sold without excise duty, for the purpose of manufacture only. It is used as a solvent of resins and gums, in the manufacture of varnishes and aniline colors, and in preserving specimens, burning in spirit and other lamps, as a cleansing agent, and for various other purposes to which ordinary alcohol was formerly applied.

Metonic Cycle, Metonic Year,

the cycle of the moon, or period of nineteen years, in which the lunations of the moon return to the same days of the month; discovered by Meton, an Athenian mathematician, who flourished 432 B.C.

Metonymy (me-ton'u-mi), a figure in rhetoric by which the name of an idea or thing is substituted for that of another, to which it has a certain relation. Thus the effect is frequently substituted for the cause, as when *gray hairs* stands for *old age;* a part for the whole, as when *keel* is put for the whole *ship;* the abstract for the concrete, as 'What doth *gravity* (this *grave person*) out of his bed at midnight?'

Metope (met'u-pe), in architecture, the interval or square space between the triglyphs in the Doric frieze.

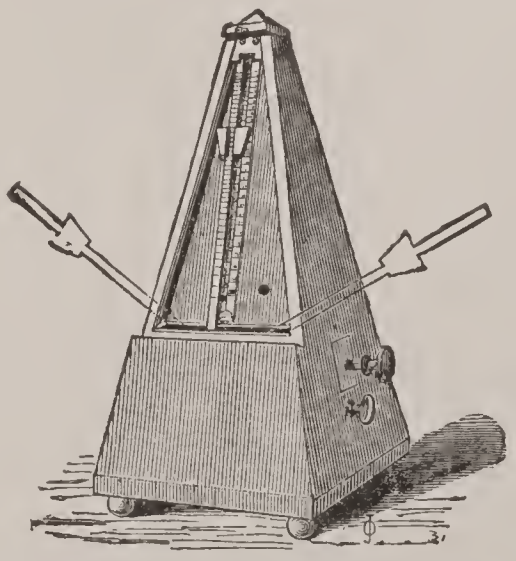
Metre (mē'tėr), rhythmical arrangement of syllables into verses, stanzas, strophes, etc. See *Rhythm*, *Verse.*

Metre, MÈTRE (French pron. mā-tr), a French measure of length, equal to 39.37 English inches or 3.28 feet, the standard of linear measure, being the ten-millionth part of the distance from the equator to the North Pole, as ascertained by actual measurement of an arc of the meridian.

Metric System of Weights and Measures.

See *Decimal System.*

Metronome (met'ru-nōm), an instrument consisting of a weighted pendulum moving on a pivot and set in motion by clock-work; invented



Metronome, showing extent of vibrations.

about 1814, for the purpose of determining, by its vibrations, the quickness or slowness with which musical composi-

tions are to be executed, so as to mark the time exactly. There is a sliding weight attached to the pendulum rod, by the shifting of which up or down the vibrations may be made slower or quicker. A scale indicates the number of audible beats given per minute, and this must be made to agree with the number attached to the music by its composer.

Metropolis (me-trop'u-lis), properly a mother-city, a city in relation to colonies it had sent out; but the term is now applied to the chief city or capital of a state or country.

Metropolitan (m e - t r u - p ol'i-tan), originally a b i s h o p resident in a metropolis or the chief city of a province, now a bishop having authority over the other bishops of a province; that is, an archbishop. In the Greek church, the title of a dignitary intermediate between patriarchs and archbishops.

Metrosideros (m e - t ro-sid'ėr-os), a genus of trees and shrubs, nat. order Myrtaceæ. *M. vera*, known as iron-wood, is a tree, a native

Iron-wood (*Metrosideros vera*).

of Java and Amboyna. Of the wood of this tree the Chinese and Japanese make rudders, anchors, etc. *M. robusta* is the rata of New Zealand, where it is employed in shipbuilding and in other ways. The trees of this genus have thick, opposite, entire leaves, and heads of showy red or white flowers.

Metternich (m e t'tėr-ni*h*), Clemens Lothar Wenzel, Prince von Metternich, an A u s t r i a n statesman, born in 1773; died in 1859. He represented Austria as ambassador at various European courts between 1801 and 1809. In the latter year he became minister of foreign affairs. In this capacity he negotiated the marriage of the Archduchess Maria Louisa with Napoleon and conducted her to Paris. In 1813, after the French reverses in Russia, Austria gave in her adhesion to the other allied powers and declared war against France. From this period the policy, not only of Austria, but in a great measure that also of the leading continental powers, was shaped by Metternich. He was one of the plenipotentiaries who signed the Treaty of Paris, and he presided at the Congress of Vienna (1814). The object of his policy was to arrest the progress of what were called revolutionary principles. With this view he formed the scheme known as the Holy Alliance. He continued in power till, by the revolution of 1848, he was driven from office, and had to flee to England, where he remained till 1851, when he returned and lived in retirement at Vienna.

Metz, a town and important fortress of Alsace-Lorraine, on the Moselle, which here divides into several arms, 79 miles northwest of Strasburg. The major part of the town stands on a height within the fortifications, outside of which there is a series of strong detached forts. The cathedral is a late Gothic structure, surmounted by a spire of open work 397 feet high. The manufactures consist of woolens, cottons, hosiery, hats, muslin, glue, leather, etc. A battle was fought under its walls between the Germans and French in August, 1870, the Germans subsequently invested it, and being reduced to a state of famine, on October 28 it capitulated with 180,000 officers and men under the command of Marshal Bazaine. It was included in the cession of territory to Germany at the peace of 1871, and its fortifications have been greatly strengthened since. Pop. 60,396.

Meudon (m*eu*-dōṇ), a town in France, department Seine-et-Oise, 6 miles E. N. E. of Versailles, a favorite holiday resort of the Parisians. Rabelais was for a short time curé of Meudon. Pop. (1906) 9597.

Meulen (m*eu*'len), Anthony Francis van der, a battle painter, born at Brussels in 1634; and died in 1690. He was employed by Louis XIV to paint the scenes of his military campaigns, and thus his pictures chiefly consisted of landscapes with n u m e r o u s figures.

Meung, or Meun, or Mehun (meuṇ), Jean de, a French poet, surnamed from his lameness *Clopinet*, was born at Meung sur Loire, about 1250; died about 1322. He lived at the court of Philippe le Bel, and enjoyed a high reputation as a scholar, a poet, and a satirist. His principal work was his con-

tinuation of the *Roman de la Rose*, begun by Guillaume de Lorris.

Meurthe (meurt), La, a river of France, which rises on the western side of the Vosges, and joins the Moselle about 7 miles N. of Nancy; total course about 100 miles.

Meurthe-et-Moselle (meurt-ė-mo-zel), a department of northeast France, formed in 1871 by uniting portions of the old departments of Meurthe and Moselle, in consequence of the cession by France to Prussia of a portion of her territory on the east under the treaty of Frankfort (May 10, 1871); area, 2024 square miles. The chief river is the Moselle. The soil is generally fertile. The principal cereals are wheat, oats and barley. Fruits are extensively grown, and the annual yield of the vines is large. The principal mineral products are iron ore and salt. Large quantities of iron and steel are now made. Among manufactures may be mentioned machinery, tools and other articles of ironware, woolens and cottons, glass, paper, earthenware, leather, etc. The capital is Nancy. Pop. (1906) 517,508.

Meuse (meuz; Latin, *Mosa*, Flemish, *Maes*, Dutch, *Maas*), a European river, which rises in France, in the south of the department Haute-Marne, and flows through France, Belgium and Holland. Its principal affluents are the Sambre, which joins it on the left at Namur, and the Ourthe, which joins it on the right at Liége. At Gorkum it joins the Waal, one of the arms of the Rhine, and gives its name to the united streams. It is divided near Dordrecht into two great rivers, the one of which bends round to the north and reaches Rotterdam; the other branch continues west; and shortly after the two branches again unite and discharge themselves into the North Sea. Its length, including windings, is 580 miles. It is navigable for about 460 miles, and canals unite it with the Moselle, Oise, and other streams. The principal towns on its banks are Namur, Huy, Seraing, Liége, Maestricht, Rotterdam, Schiedam and Vlardingen.

Meuse, a northeast department of France; area, 2404 sq. miles. The only mineral of importance is iron, which is extensively worked. Rather more than one-half of the whole surface is arable, and little of it is waste. The principal crops, besides corn, are hemp, flax and oleaginous seeds, and considerable tracts are covered with vines, which yield wine of good name. The manufactures are varied. Bar-le-Duc is the capital. Pop. 280,220.

Mexico (meks'i-kō), a republic of North America, between the United States and Central America, and having on the east the Gulf of Mexico, on the west the Pacific Ocean; area estimated at 767,605 sq. miles. Nearly one-half of this territory lies within the torrid zone, but the peculiar geological structure of the republic, that of a central elevated plateau, bounded on both sides by lowlands of torrid temperature, and rising into volcanic peaks, supported by the two branches of the Mexican Cordilleras, the Northeast and Northwest, causes the greatest diversity of climate. The principal summits, all of volcanic origin, are Popocatepetl (Smoking Mountain), about 17,500 feet, still indicating its activity by occasional clouds of smoke and ashes; Orizaba, or Citlaltepetl (Star Mountain), 18,250, and Ixtaccihuatl (White Lady), 16,960. All these are above the limit of perpetual snow, which is here about 15,000 feet. The largest river is the Rio Grande del Norte, forming part of the boundary with the United States; most of the others are rather insignificant. The lakes, which abound, are individually of little importance; some of them have no outlet. Mexico is a country of great natural resources. There is a vast variety of useful indigenous trees and plants, and many others have been introduced. Rubber is largely produced, and Mexico has become one of the chief sources of this useful material. It is especially the home of the cactus, which grows here in a great variety of forms. The fauna is greatly varied, comprising both temperate and tropical flowers, birds of fine plumage being very abundant, as also serpents and saurians. The principal agricultural products are maize and other grains, sisal-hemp, tropical fruits, cotton, coffee, sugar, tobacco, indigo, vanilla, cochineal, etc., some of these growing in the hot lowlands, others, as wheat and corn, on the elevated plateau. Large numbers of cattle are reared, especially in the north. The chief industries (besides agriculture and mining) are the manufacture of cottons and woolens, pottery, tobacco and cigars, leather, soap, sugar refining, brewing and distilling (principally from the agave or maguey), etc. Mexico is rich in minerals, especially gold and silver, which are far the most valuable of the exports. Other minerals are copper, iron, lead, quicksilver, antimony and sulphur, the latter in vast quantities in the crater of Popocatepetl. The Mexican ports on the Atlantic side are most of them insecure, and many of them are mere roadsteads. On the western coast there is, however, a series of

magnificent ports, from Acapulco to Guaymas, many of which are scarcely if at all frequented. The imports consist chiefly of cotton, woolen and linen manufactures, wrought-iron and machinery; and the exports of the precious metals, sisal-hemp, coffee, hides and mahogany and other woods. The railways are being rapidly developed, largely by aid of United States capital, and the country being opened to commerce. The length of railways in 1910 was 15,256 miles, including a line across the Tehauntepec isthmus from the Atlantic to the Pacific, with a large transit trade.

Administration, etc.—Mexico is divided into twenty-seven States; two Territories, Lower California and Tepic; and the Federal District, which comprises Mexico, the capital of the republic, and a small portion of the adjoining territory. The population in 1910 was 15,063,207. The proportion of the different races in the population is believed to be 20 per cent. of pure whites, 43 per cent. of mixed race, and the remainder Indians. The Creoles are naturally the dominant race, and the Spanish language is generally spread over Mexico. Roman Catholicism, the state religion of Mexico until 1857, is still the prevailing religion. But there is now no connection between church and state. All religions are tolerated, but no religious body can own landed property. Primary education is compulsory, but the law is not strictly enforced. The schools are supported partly by the central and partly by the state government, and partly by charitable foundations supported by voluntary subscriptions. The present form of government is that of a federal republic, each member of which manages its own internal concerns. The supreme executive power is vested in a president, who has powers very similar to those of the President of the United States. The revenue usually amounts to $50,000,000; the debt, foreign and domestic, amounts to about $220,000,000. The exports in 1910 amounted to $129,508,-002; the imports to $97,039,050.

History.—Prior to 1521 Mexico was inhabited by an Aztec race and ruled by native emperors. (See *Aztecs.*) This race had attained a considerable degree of civilization, and interesting remains of its architecture are existent in the teocallis or pyramids of Cholula, Pueblo and Papantla. In 1521 Mexico was conquered by the Spaniards under Hernando Cortez. Cortez called it New Spain, and was created captain-general, but in 1535 was displaced by a viceroy. From that date till 1821 the country was one of the viceroyalties of Spanish America, and governed by a series of viceroys possessed of almost absolute power. The spirit of discontent engendered by the selfishness of the Spanish rule manifested itself in open rebellion, when, in 1808, the deposition of King Ferdinand by Napoleon and the unsettled state of affairs in Spain afforded an opportunity. This rebellion, begun by a priest, Hidalgo, and continued with more or less vigor till 1821, secured in that year the independence of Mexico. After an unsuccessful attempt to secure a Bourbon prince for the throne, Iturbide, the chief of the insurgents, caused himself to be proclaimed emperor, May 18, 1822, under the title of Augustin I, but was forced to abdicate, March, 1823. A new form of government, on federal republican principles, was then established, the constitution being adopted and proclaimed in 1824. Since the acquisition of its independence Mexico has had a most unsettled history and has been the scene of almost incessant civil wars. Texas rebelled in 1835 and won its independence, and a war with the United States in 1847-48 led to the loss of a great section of its territory. A French army invaded Mexico in 1862, and under French auspices the Austrian archduke Maximilian was made emperor and ruled from 1864 to 1867. In 1871 Juarez was elected president, succeeded by Lerdo de Tejada, who in 1876 was overthrown by Porfirio Diaz, who was reëlected in 1884 and every fourth year afterwards until 1910. The opposition candidate, Dr. Francisco Madero, was in prison at the time of the latter election. Released after the election, he fled to Texas, organized a revolution in November, and conducted it with such success that Diaz was forced to resign in May, 1911. He left the country for Europe and Madero was soon afterwards elected president.

Mexico, capital of the republic of Mexico, is situated within the State of Mexico in the Federal District (461 sq. miles), about 7400 feet above the level of the sea, near several lakes. It is situated at about an equal distance from Vera Cruz on the Mexican Gulf, and Acapulco on the Pacific, and is laid out with great regularity. It is on the site of the ancient city of Tenochtitlan, which was destroyed on the capture of Mexico by the Spaniards in 1521. The principal public buildings are the cathedral, about 500 feet in length and 420 feet in width, forming one of the sides of the central square; the palace of government; the college of mines, a noble building, but now somewhat dilapidated; the mint, with a front of 360 feet by 250 in depth, the town-house, the university,

MEXICO

Scale of Miles

50 100 200 300 400 500

Railroads

Railroads Projected

Size of type indicates relative importance of places

C. S. HAMMOND & CO. N.Y.

Longitude West from Greenwich

GULF OF MEXICO

PACIFIC OCEAN

GULF OF CALIFORNIA

GULF OF CAMPECHE

GULF OF TEHUANTEPEC

UNITED STATES OF MEXICO

TROPIC OF CANCER

TROPIC OF CANCER

REVILLAGIGEDO ISLANDS

YUCATAN CHANNEL

Rio Grande

Colorado R.

Mississippi R.

Delta of the Mississippi

Mazatlan

Monterey

Saltillo

Durango

Zacatecas

San Luis Potosi

Guadalajara

Chihuahua

Hermosillo

Tucson

El Paso

San Antonio

Houston

New Orleans

Galveston

Mobile

Pensacola

Vera Cruz

Campeche

Merida

Progreso

Tampico

Corpus Christi

Laredo

Eagle Pass

Port Lavaca

Brownsville

Matamoras

Acapulco

Oaxaca

Puebla

Mexico

Guatemala

Belize

Puerto Cortes

Honduras

Salvador

Nicaragua

Cape San Lucas

La Paz

Guaymas

Mazatlan

Tepic

Colima

Manzanillo

Cayutlan

Aspisa B.

Banderas B.

C. Corrientes

Alijos Reef

Alacran Reef

Campeche Bank

Seal Bank

New Bank

Arrecife Alacranes

Boquillas Cerradas

B. San Antonio

B. de Jesus Maria

Espiritu Santo B.

Ascension B.

Chetumal B.

Turneffe I.

Gulf of Honduras

Staun Creek

All Pines

Isabel I.

Swan Is.

Roatan I.

Bonacca I.

Utila I.

Guanaja I.

Bay Is.

Gulf of Fonseca

Tehuantepec R.

Salina Cruz

Tres Picos

Tuxtla

Frontera

Balancan

Tabasco R.

Grijalva R.

Usumacinta R.

Panuco R.

Tuxpan

Tampico

Aldama

Matamoros

Victoria

Linares

Montemorelos

Cadereyta

Ramos

Sabinas

Nueva Laredo

Rodriguez

Lampazos

Monclova

Parral

Jimenez

Chihuahua

Ojinaga

Presidio del Norte

Ojinaga

Sierra Blanca

Sweet Water

Cisco

Ft. Worth

Dallas

Waco

San Angelo

Ft. Stockton

Austin

Beaumont

Port Arthur

Sabine

Longview

Shreveport

Vicksburg

Jackson

Meridian

Montgomery

Baton Rouge

Mobile

Pensacola

Tucson

Nogales

Douglas

Juarez

Silver City

Deming

Rincon

Lordsburg

Bisbee

Tombstone

Bensou

Yuma

San Diego

Calexico

Ensenada

Tia Juana

Colorado

San Thomas

San Ramon

Trinidad Micaray

San Quintin

Rosario

San Fernando

Soyata

Port Isabel

Altar

Magdalena

Imuris

Cananea

Fronteras

Arispe

Corralitos

Coz

Nacosari

Querobabi

Libertad

Bacuache

Norias

Hermosillo

Torres

Prietas

Tonichi

Cumuripa

Burras

Empalme

Guaymas

Corral

Navojoa

Baca

Choix

Batopilas

Minaca

Cusihuiriachi

Chihuahua

Sta. Eulalia

Sta. Isabel

Meoqui

La Cruz

Sta. Rosalie

Sierra Mojada

Dolores

Jimenez

Parral

Adriana

Escalon

Saez

Descubridora

Indio

Jimulco

Torreon

Viesca

Cuneros

Pedro

Ramos

Cadereyta

Monterey

Montemorelos

Linares

San Carlos

Laventura

Concepcion

La Parida

San Isidro

Victoria

Jimenez

Santander R.

Soto la Marina

Matchuala

Catorce

Potrero

Vanegas

Guzman

Porras

Durango

La Colorada

Sombrerete

Mesquital

Mazatlan

Concordia

Rosario

San Andres

Fresnillo

Zacatecas

Ojo Caliente

Mesquite

Acaponeta

Pimal

Pk.

San Luis Potosi

Calpulalpa

Aguascalientes

Encarnacion

Rincon

S. Felipe

Villa Reyes

Tancanhuitz

Valles

Tampico

Aldama

Magiscatzin

Tancasnequi

Laguna Seca

Charcos

Llera

Pozos

Guanajuato

Leon

Irapuato

Salamanca

Celaya

Queretaro

Pachuca

Tuxpan

Cazones B.

Tecolutla

Nautla

Perantla

Veracruz

Jalapa

Orizaba

Puebla

Mexico

Toluca

Tulancingo

Tula

Morelia

Salvatierra

Jaral

Valle

Guadalajara

Zapotlanejo

Autlan

Sayula

Zacoalco

Guzman

Colima

Manzanillo

Cayutlan

Tepic

Etzatlan

Ameca

Camichin Estero

LAS TRES MARIAS

Chapala L.

Zapotlan L.

Lerma R.

Balsas R.

Petacalco B.

Maruata

Tamarindo

Coyuca

Union

Tecpan

Acapulco

Ometepec

Jamiltepec

Verde R.

Pochutla

Tehuantepec

Chilpancingo

Chilapa

Chicatlan

Flaxico

Ixtlan

Acayuca

Suchil

Huimanguillo

San Juan Bautista

S. Bartolome

San Cristobal

Flores

Peten L.

Tenabo

Hecelchakan

Hunucma

Progreso

Merida

Tunkas

Valladolid

Sotuta

Tekax

Peto

Tsibalchen

Hampolol

Champoton

Campeche

Sabancuy

Balcalar

Mesapich

Tzucox

Chetumal

Corozal

Satenejo

Soliman

Port

Ascension B.

Espiritu Santo B.

Belize

Turneffe I.

Staun Creek

All Pines

Gulf of Honduras

Puerto Cortes

San Pedro

Santiago

Puerto Barrios

Isabal

Amatitlan

Quezaltenango

Retalhuleu

Champerico

Sta. Maria

Huistla

Guatemala

New Guatemala

Esquiotla

Sonsonate

Acajutla

San Salvador

La Libertad

La Union

La Brea

Esperanza

Honduras

Salvador

Nicaragua

Fonseca G.

Gulf of Tehuantepec

Isthmus of Tehuantepec

Tres Picos

Tuxtla

Frontera

Balancan

Tabasco R.

Grijalva R.

Usumacinta R.

Panuco R.

Rio Grande

Colorado R.

Mississippi R.

Delta of the Mississippi

Mazatlan

Monterey

Saltillo

Durango

Zacatecas

San Luis Potosi

Guadalajara

Chihuahua

Hermosillo

Tucson

El Paso

San Antonio

Houston

New Orleans

Galveston

Mobile

Pensacola

Vera Cruz

Campeche

Merida

Progreso

Tampico

Corpus Christi

Laredo

Eagle Pass

Port Lavaca

Brownsville

Matamoras

Acapulco

Oaxaca

Puebla

Mexico

Guatemala

Belize

Puerto Cortes

Honduras

Salvador

Nicaragua

Cape San Lucas

La Paz

Guaymas

Mazatlan

Tepic

Colima

Manzanillo

Cayutlan

Aspisa B.

Banderas B.

C. Corrientes

Alijos Reef

Alacran Reef

Campeche Bank

Seal Bank

New Bank

Arrecife Alacranes

Boquillas Cerradas

B. San Antonio

B. de Jesus Maria

Espiritu Santo B.

Ascension B.

Chetumal B.

Turneffe I.

Gulf of Honduras

Staun Creek

All Pines

Isabel I.

Swan Is.

Roatan I.

Bonacca I.

Utila I.

Guanaja I.

Bay Is.

Gulf of Fonseca

Tehuantepec R.

Salina Cruz

Tres Picos

Tuxtla

Frontera

Balancan

Tabasco R.

Grijalva R.

Usumacinta R.

Panuco R.

Tuxpan

Tampico

Aldama

Matamoras

Victoria

Linares

Montemorelos

Cadereyta

Ramos

Sabinas

Nueva Laredo

Rodriguez

Lampazos

Monclova

Parral

Jimenez

Chihuahua

Ojinaga

Presidio del Norte

Ojinaga

Sierra Blanca

Sweet Water

Cisco

Ft. Worth

Dallas

Waco

San Angelo

Ft. Stockton

Austin

Beaumont

Port Arthur

Sabine

Longview

Shreveport

Vicksburg

Jackson

Meridian

Montgomery

Baton Rouge

Mobile

Pensacola

Tucson

Nogales

Douglas

Juarez

Silver City

Deming

Rincon

Lordsburg

Bisbee

Tombstone

Bensou

Yuma

San Diego

Calexico

Ensenada

Tia Juana

Colorado

San Thomas

San Ramon

Trinidad Micaray

San Quintin

Rosario

San Fernando

Soyata

Port Isabel

Altar

Magdalena

Imuris

Cananea

Fronteras

Arispe

Corralitos

Coz

Nacosari

Querobabi

Libertad

Bacuache

Norias

Hermosillo

Torres

Prietas

Tonichi

Cumuripa

Burras

Empalme

Guaymas

Corral

Navojoa

Baca

Choix

Batopilas

Minaca

Cusihuiriachi

Chihuahua

Sta. Eulalia

Sta. Isabel

Meoqui

La Cruz

Sta. Rosalie

Sierra Mojada

Dolores

Jimenez

Parral

Adriana

Escalon

Saez

Descubridora

Indio

Jimulco

Torreon

Viesca

Cuneros

Pedro

Ramos

Cadereyta

Monterey

Montemorelos

Linares

San Carlos

Laventura

Concepcion

La Parida

San Isidro

Victoria

Jimenez

Santander R.

Soto la Marina

Matchuala

Catorce

Potrero

Vanegas

Guzman

Porras

Durango

La Colorada

Sombrerete

Mesquital

Mazatlan

Concordia

Rosario

San Andres

Fresnillo

Zacatecas

Ojo Caliente

Mesquite

Acaponeta

Pimal

Pk.

San Luis Potosi

Calpulalpa

Aguascalientes

Encarnacion

Rincon

S. Felipe

Villa Reyes

Tancanhuitz

Valles

Tampico

Aldama

Magiscatzin

Tancasnequi

Laguna Seca

Charcos

Llera

Pozos

Guanajuato

Leon

Irapuato

Salamanca

Celaya

Queretaro

Pachuca

Tuxpan

Cazones B.

Tecolutla

Nautla

Perantla

Veracruz

Jalapa

Orizaba

Puebla

Mexico

Toluca

Tulancingo

Tula

Morelia

Salvatierra

Jaral

Valle

Guadalajara

Zapotlanejo

Autlan

Sayula

Zacoalco

Guzman

Colima

Manzanillo

Cayutlan

Tepic

Etzatlan

Ameca

Camichin Estero

LAS TRES MARIAS

Chapala L.

Zapotlan L.

Lerma R.

Balsas R.

Petacalco B.

Maruata

Tamarindo

Coyuca

Union

Tecpan

Acapulco

Ometepec

Jamiltepec

Verde R.

Pochutla

Tehuantepec

Chilpancingo

Chilapa

Chicatlan

Flaxico

Ixtlan

Acayuca

Suchil

Huimanguillo

San Juan Bautista

S. Bartolome

San Cristobal

Flores

Peten L.

Tenabo

Hecelchakan

Hunucma

Progreso

Merida

Tunkas

Valladolid

Sotuta

Tekax

Peto

Tsibalchen

Hampolol

Champoton

Campeche

Sabancuy

Balcalar

Mesapich

Tzucox

Chetumal

Corozal

Satenejo

Soliman

Port

Ascension B.

Espiritu Santo B.

Belize

Turneffe I.

Staun Creek

All Pines

Gulf of Honduras

Puerto Cortes

San Pedro

Santiago

Puerto Barrios

Isabal

Amatitlan

Quezaltenango

Retalhuleu

Champerico

Sta. Maria

Huistla

Guatemala

New Guatemala

Esquiotla

Sonsonate

Acajutla

San Salvador

La Libertad

La Union

La Brea

Esperanza

Honduras

Salvador

Nicaragua

Fonseca G.

Gulf of Tehuantepec

Isthmus of Tehuantepec

Tres Picos

Tuxtla

Frontera

Balancan

Tabasco R.

Grijalva R.

Usumacinta R.

Panuco R.

etc. There are numerous convents, hospitals, churches, theaters, etc. The manufactures are of comparatively limited extent, and the trade is mostly in the hands of foreigners. This city enjoys a mild climate, and a healthy atmosphere. Pop. (1910), 470,659.

Mexico, one of the states of the Mexican republic; area, 8950 sq. miles. It lies in the south of Mexico, and forms an elevated region, one of the best cultivated and most thickly peopled parts of the republic. Its capital is Toluca, but it embraces within its boundaries the city and Federal District of Mexico. Pop. 975,019.

Mexico, a city, capital of Audrain Co., Missouri, on a branch of Salt River, 50 miles N. by E. of Jefferson City. It contains the Missouri Military Academy and the Hardin College for Women. It manufactures flour, carriages, plows, stove-linings, bricks, etc. Pop. 5939.

Mexico, GULF OF, a large bay or gulf of the Atlantic, oval in form and nearly surrounded by a continuous coast line 3000 miles in length, of the United States and Mexico; estimated area, 800,000 square miles. From it is named the Gulf Stream, which issues from it by the Strait of Florida.

Meyer (mī'er), GEORGE VON LENGERKE, cabinet official, was born at Boston, Massachusetts, in 1858. He became a member of the Massachusetts legislature in 1892 and speaker 1894-96. He was sent as ambassador to Italy in 1900, to Russia in 1905, and was appointed Postmaster General in 1907 and Secretary of the Navy in 1909.

Meyerbeer (mī'ėr-bār), GIACOMO, musical composer, born in Berlin in 1791; died at Paris in 1864. His father, Jakob Beer, was a rich banker of Jewish descent. He gave early proof of his devotion to music, and at nine was regarded as one of the best pianists in Berlin. He studied under Bernhard Anselm Weber at Berlin, and the Abbé Vogler at Darmstadt, where he began his life-long friendship with Karl Maria von Weber. His first two operas, *Jephtha's Daughter* and *Abimelek*, the one produced at Munich and the other at Vienna, having failed, he went to Italy. There he rapidly composed a series of operas in the Italian style, which were generally well received. In 1826 he went to Paris. There he produced *Robert le Diable* (1831); *Les Huguenots* (Paris, 1836); *Le Prophète* (1849); *Pierre le Grand* (1854); *L'Africaine* (1865), etc. In these Parisian operas he ceases to be an imitator of the Italians, and it is upon them that his fame as a composer is founded. Besides his operas Meyerbeer wrote a great number of songs, an oratorio, cantatas, a *Te Deum*, etc.

Meyrick (mėr'ik), SIR SAMUEL RUSH, an English archæologist, born in 1783; died in 1848. He formed a finely arranged collection of medieval armor, now in South Kensington Museum. His chief work is the beautifully illustrated *Critical Enquiry into Ancient Armor* (best ed. 3 vols., 1844).

Mezereon (me-zē're-on; *Daphne Mezereum*), a well-known shrub grown in gardens, having fragrant pink flowers that appear in spring before the leaves, and are followed by red and poisonous berries. The bark is exceedingly acrid, and has been used in medicine. See *Daphne*.

Mézières (mā-zyār), a town of France, capital of department Ardennes, on the right bank of the Meuse, 120 miles northeast of Paris. It is a fortress of the second class. Pop. 7884.

Mezzanine (met'za-nēn), in architecture, a story of small height introduced between two higher ones; an entresol.

Mezzofanti (met-zo-fän'tē), GIUSEPPE, cardinal, distinguished for his knowledge of languages, was born in 1771, at Bologna, and died at Naples in 1849. He succeeded Mai as keeper of the Vatican library. Towards the end of his life he is said to have understood and spoken fifty-eight languages, but he rendered no valuable services to learning.

Mezzotint (mez'ō-tint; It. *mezzo*, middle, half, and *tinto*, tint), a particular manner of engraving on copper or steel in imitation of painting in Indian ink, the lights and gradations being scraped and burnished out of a prepared dark ground. The surface of the plate is first completely covered with minute incisions, so that it would give in this condition a uniform black impression. The design is then drawn on the face, and the dents are erased from the parts where the lights of the piece are to be, the parts which are to represent shades being left untouched or partially scraped according to the depth of tone.

Mhow, or MOW (mou), a town and British cantonment, Hindustan, Holkar's Dominions, 13 miles southwest of Indor. It was one of the centers of the Sepoy mutiny of 1857.

Miako. See *Kioto*.

Miami (mī-ä'mi), a river of the United States, in Ohio, joining the Ohio below Cincinnati; length 150 miles.

Miami, a city of Dade Co., Florida, at the mouth of the Miami River. It has steamship connection with Havana and other ports. Pop. 5471.

Miani, or MEANEE (mē-án'ē), a village of India, situated on a branch of the Indus, 6 miles north of Haidarabad, the scene of a battle fought on February 17, 1843, in which Sir Charles Napier defeated the Ameers of Sind.

Miasma, pl. MIASMATA. See *Malaria.*

Miautse (mi-aut'se), a race of people found in the provinces of Yunnan, Kweichow, Kwang-tse and Kwang-tung in China. They are one of the aboriginal tribes of the country.

Mica (mī'ka), a mineral of a foliated structure, consisting of thin flexible laminæ or scales, having a shining, pearly, and almost metallic luster. These are sometimes parallel, sometimes interwoven, sometimes wavy or undulated, sometimes representing filaments. The laminæ of mica are easily separated, and are sometimes not more than the 300,000th part of an inch in thickness. The plates are sometimes as large as 18 inches diameter. They are employed in Russia for window panes, and in that state are called *muscovy-glass.* Mica enters into the composition of the crystalline rocks, as granite, gneiss, mica schists, chlorites, talcose rocks, and occurs in trappean and volcanic products. It is found also in many sedimentary rocks, as shales and sandstones, giving them their laminated texture. In the latter case, it is derived from the disintegration of the crystalline rocks. It is essentially a silicate of alumina, with which are variously combined small proportions of the silicates of potash, soda, lithia, oxide of iron, oxide of manganese, etc., in accordance with which several species have been constituted, as *common* or *potash mica, lithia mica, magnesia mica, pearl mica.* Regarded as minerals, varieties of mica have received the names of biotite, lepidolite, muscovite, lepidomelane, steatite, etc.

Micaceous Rocks (mī-kā'shus), rocks of which mica is the chief ingredient, as mica-slate and clay-slate.

Micah (mī'ka), the sixth of the minor prophets, a member of the tribe of Judah. He prophesied in the reigns of Jotham, Ahaz and Hezekiah, and was a contemporary of Isaiah. His style is pure and correct, his images bold and vivid.

Mica Schist, Mica Slate, a metamorphic rock, composed of mica and quartz; it is highly fissile and passes by insensible gradations into clay-slate.

Michael (mī'kel), ST. (Hebrew, 'he who is equal to God'), in Jewish theosophy, the greatest of the angels (Daniel x, 13, 21; xii, 1), one of the seven archangels. In the New Testament he is spoken of as the guardian angel of the church (Jude, ver. 9; Rev. xii, 7). There is a festival of St. Michael and All Angels in the Western Church, held on September 29. (See *Michaelmas.*)—The order of St. Michael and St. George is a British order of knighthood dating from 1818. It consists of Knights Grand Cross (G.C.M.G.), Knights Commanders (K.C.M.G.), and Companions (C.M.G.). The ribbon of the order is blue with a red stripe down the center. The badge is a white star of seven double rays, having in the center a representation of St. Michael overcoming Satan. The motto is *Auspicium melioris ævi.*

Michael, ST. or SAO MIGUEL, the largest of the Azores, famous for the production of oranges and lemons, of which it exports 120,000 boxes annually. The population is 125,183; capital, Ponta Delgado.

Michael Angelo. See *Buonarotti.*

Michaelis (mi-*h*ā-ā'lis), JOHN DAVID, a German theologian and orientalist, born in 1717; died in 1791. He was professor of philosophy in the University of Göttingen from 1745 till his death. His labors in biblical criticism and history are of great value. His principal works are *Mosaisches Recht* (translated into English, under the title of *Commentaries on the Laws of Moses*); *Introductions to the Study of the Old and New Testaments* (the latter has been translated by Marsh); *Spicilegium Geogr, Hebræorum; Translations of the Old and New Testaments;* and grammatical and lexicographical productions.

Michaelmas (mik'el-mas), the feast of St. Michael the Archangel (see *Michael, St.*). It falls on the 29th of September, and is supposed to have been established towards the close of the fifth century. In England, Michaelmas is one of the regular dates for settling rents.

Michaelmas Daisy, a name applied to various perennial species of aster, which are common inhabitants of flower borders, growing to the height of 2 feet, and blooming about Michaelmas.

Michaud (mi-shō), JOSEPH FRANÇOIS, a French historian and publicist, born in 1767; died in 1839. His principal works are *Histoire des Croi-*

MICHIGAN

Scale of Miles
0 10 20 40 60 80

Same scale as main map

ISLE ROYALE
LAKE SUPERIOR

LAKE SUPERIOR
Elevation above Sea Level 602 feet

LAKE MICHIGAN
Elevation above Sea Level 582 feet

LAKE HURON
Elevation above Sea Level 582 feet

LAKE ERIE

Longitude West from Greenwich
A 88° B 87° C 86° D 85° E 89° G
1 2 3 4 5 6 7
47° 46° 45° 44° 43° 42°

MANITOU I.
Keweenaw Pt.
APOSTLE ISLANDS
Eagle River
Calumet
Laurium
Red Jacket
Houghton
Red Ridge
Atlantic Mine
Ontonagon
14 Mile Pt.
Greenland
Mass
Rockland
Ironwood
Bessemer
Gogebic L.
Wakefield
Hurley
Bruce Crossing
S. Ewen
Baraga
L'Anse
Pequaming
Chassell
Jacobsville
Covington
Nestoria
Michigamme
Sidnaw
Watersmeet
Leechwood
Amasa
Iron River
Crystal Falls
WISCONSIN
Whitefish Pt.
Grand Marais
GRAND I.
Whitefish Bay
Munising
Wetmore
Shingleton
Seney
Doty
Newberry
Soo Jc.
Bay Mills
Sault Ste Marie
ST. JOSEPH I.
Pickford
Trout Lake
Manistique L.
Portage
Manistique
Rapid Rivers
Nahma
Winters
Escanaba
Gladstone
Sagola
Republic
Palmer
Princeton
National Mine
Marquette
Michigamme
Beacon
Champion
Ishpeming
Negaunee
Ladoga
Metropolitan
Iron Mtn.
Quinnesec
Vulcan
Hermansville
Powers
Menominee
Marinette
Peninsula Pt.
Detour
DRUMMOND I.
Detour Passage
St. Ignace
Mackinac I.
Mackinac Island
Str. of Mackinac
GRAND MANITOULIN I.
THE DUCKS
COCKBURN I.
Squaw I.
Garden I.
Hog I.
High I.
Bull I.
Beaver I.
Mackinaw
Cheboygan
BOIS BLANC I.
Thompson
Garden
Cross Village
Harbor Spr.
Alanson
Burt L.
Mullet L.
Cheboygan L.
Hammonds B.
Tower
Onaway
Rogers
Millersburg
Grand L.
Long L.
Alpena
North Pt.
Thunder Bay
Hillman
Atlanta
Hubbard Lake
Hubbard L.
South Pt.
Blackriver
Spruce
Lincoln
Harrisville
Alcona
Au Sable
Mikado
Oscoda
Rose City
E. Tawas
Tawas Cy.
Whittemore
Prescott
Turner
Augres
Pte. Aux Barques
Port Austin
Grindstone Cy.
Bay
Saginaw
Standish
Kinde
Port Hope
Harbor Beach
Caseville
Bad Axe
Ubly
Minden Cy.
Gagetown
Elkton
Pigeon
Sebewaing
Bay City
W. Bay City
Essexville
Auburn
Carrollton
Reese
Akron
Fairgrove
Caro
Cass Cy.
Deckerville
Sandusky
Carsonville
Kingston
Vassar
Mayville
Marlette
Croswell
Lexington
Brown Cy.
Yale
Columbiaville
Lapeer
Almont
Port Huron
Memphis
St. Clair
Richmond
Romeo
Anchor Bay
Mt. Clemens
Warren
Roseville
L. St. Clair
Grosse Pointe Farms
Detroit
Wyandotte
Ecorse
Grosse Isle
Monroe
Detroit R.
Pte. Pelee
PT. PELEE I.
Toledo
Saginaw
Ithaca
St. Louis
Breckenridge
Merrill
Midland
Chippewa
Shepherd
Mt. Pleasant
Barryton
Clare
Coleman
Harrison
Beaverton
Farwell
Crumpo
Pinconning
Standish
Gladwin
Leota
Alger
Omer
Au Gres
Gaylord
Lewiston
Hubbard Lake
Alba
Mancelona
Elmira
Vanderbilt
Boyne
Petoskey
Wolverine
Charlevoix
Lit. Traverse B.
Harbor Spr.
N. Fox I.
S. Fox I.
Northport
East Jordan
Central Lake
Bellaire
Leland
N. Manitou I.
S. Manitou I.
Sutton's Bay
Cedar
Empire
Traverse Cy.
Elk Rapids
Kalkaska
Au Sable
Grayling
Mio
Southbranch
Roscommon
Lupton
Frankfort
S. Frankfort
Thompsonville
Arcadia
Benzonia
Kingsley
Copemish
Fife Lake
S. Boardman
Higgins L.
Manton
Jennings
Cadillac
McBain
West Branch
Houghton L.
Leota
Tustin
Luther
La Roy
Manistee
Harrlette
Filer Cy.
Stronach
Big Sable Pt.
Manitowoc
Sheboygan
Ludington
Scottville
Baldwin
Evart
Reed Cy.
Hersey
Chippewa L.
Big Rapids
Hesperia
Shelby
White Cloud
Fremont
Morley
Howard Cy.
Mecosta
Lakeview
Edmore
Pentwater
Hart
Marlboro
Whitehall
North Muskegon
Muskegon
Muskegon R.
Newaygo
Sand Lake
Coral
Bailey
Cedar Sprs.
Sparta
Fruitport
Ferrysburg
Grand Haven
Milwaukee
Berlin
Belding
Ionia
Stanton
Elmhall
Sumner
Sheridan
Carson Cy.
Ashley
Rockford
Palo
St. Johns
Owosso
Corunna
Flushing
Elsie
Chesaning
Montrose
Clio
Mt. Morris
Davison
Grand Blanc
Oxford
Orion
Lake Orion
Rochester
Holly
Highland
Milford
Brighton
Howell
Fowlerville
Williamston
Perry
Laingsburg
Westphalia
Portland
Vernon
Durand
Byron
Linden
Grand Rapids
Grandville
Caledonia
Freeport
Woodland
Sunfield
LANSING
Grand Ledge
Potterville
Nashville
Martin
Hastings
Middleville
Dorr
Zeeland
Holland
Saugatuck
Douglas
Fennville
Allegan
Plainwell
Otsego
Kalamazoo
Gobleville
Bloomingdale
South Haven
Waukegan
Kenosha
Racine
Chicago
Michigan City
New Buffalo
Three Oaks
Galien
Berrien Springs
Niles
Cassopolis
Vandalia
Centreville
Edwardsburg
Buchanan
South Bend
White Pigeon
Sturgis
Coldwater
Bronson
Quincy
Burr Oak
Three Rivers
Sherwood
Colon
Litchfield
Meadow
Schoolcraft
Vicksburg
Climax
Union City
Tekonsha
Battle Creek
Marshall
Albion
Concord
Homer
Jackson
Parma
Leslie
Eaton Rapids
Olivet
Charlotte
Mason
Dansville
Stockbridge
Bellevue
Richland
Augusta
Kalamazoo
Paw Paw
Lawton
Decatur
Hartford
Lawrence
Coloma
Watervliet
Coveri
Benton Harbor
St. Joseph
Ann Arbor
Manchester
Napoleon
Hanover
Brooklyn
Clinton
North Adams
Tecumseh
Britton
Milan
Ypsilanti
Belleville
Plymouth
Northville
Dexter
Chelsea
Pinckney
Dundee
Carleton
Rockwood
Flat Rock
Adrian
Addison
Jonesville
Hillsdale
Reading
Litchfield
Wauseon
Hudson
Clarion
Morenci
Bryan
Blissfield
Petersburg
Milan
Saline
Ypsilanti
Wayne
Dearborn
Detroit
Wyandotte
Ecorse
Grosse Isle
Monroe
Toledo
Pte. Pelee
PT. PELEE I.
Sandusky
Put-in-Bay
Kelleys I.
Middle Bass I.
North Bass I.
Marblehead
Port Clinton
Huron
Vermilion
Lorain
Cleveland
Rocky R.
Bay View
Sandusky
Fremont
Clyde
Green Springs
Tiffin
Republic
Bloomville
Attica
Monroeville
Norwalk
Wakeman
Milan
Berlin Heights
Sandusky
Bellevue
Clarksfield
Greenwich
Shiloh
Plymouth
Shelby
Mansfield
Lexington
Ontario
Willard
Crestline
Galion
Bucyrus
Caledonia
Marion
Delaware
Sunbury
Galena
Orange
Worthington
Columbus
Grove City
Hilliard
Dublin
Plain City
Urbana
Mechanicsburg
Springfield
South Charleston
Jamestown
Xenia
Yellow Springs
Fairborn
Dayton
Miamisburg
Centerville
Germantown
Franklin
Middletown
Hamilton
Oxford
Eaton
Lewisburg
Camden
Seven Mile
Ross
Fairfield
Cincinnati
Mt. Healthy
Glendale
Reading
Wyoming
Lockland
Wayne
Dearborn
Detroit
Wyandotte
Ecorse
Grosse Isle
Monroe
Toledo
Pte. Pelee
PT. PELEE I.
Sandusky
Put-in-Bay
Kelleys I.
Middle Bass I.
North Bass I.
Marblehead
Port Clinton
Huron
Vermilion
Lorain
Cleveland
Rocky R.
Bay View
Sandusky
Fremont
Clyde
Green Springs
Tiffin
Republic
Bloomville
Attica
Monroeville
Norwalk
Wakeman
Milan
Berlin Heights
Sandusky
Bellevue
Clarksfield
Greenwich
Shiloh
Plymouth
Shelby
Mansfield
Lexington
Ontario
Willard
Crestline
Galion
Bucyrus
Caledonia
Marion
Delaware
Sunbury
Galena
Orange
Worthington
Columbus
Grove City
Hilliard
Dublin
Plain City
Urbana
Mechanicsburg
Springfield
South Charleston
Jamestown
Xenia
Yellow Springs
Fairborn
Dayton
Miamisburg
Centerville
Germantown
Franklin
Middletown
Hamilton
Oxford
Eaton
Lewisburg
Camden
Seven Mile
Ross
Fairfield
Cincinnati
Mt. Healthy
Glendale
Reading
Wyoming
Lockland

sades, Bibliothèque des Croisades, Biographie Moderne, and *Biographie Universelle* (originated 1811).

Michel (mi-shell), FRANCISQUE XAVIER, a French antiquarian and miscellaneous writer, born at Lyons in 1809; died at Paris in 1887. He edited a large number of old MSS., and translated the works of several British poets. His best-known works are *Les Ecossais en France, et Les Français en Ecosse,* and *A Critical Inquiry into the Scottish Language.*

Michelet (mēsh-lā), JULES, a French historian and miscellaneous writer, was born in Paris in 1798; died in 1874. In 1821 he was called to the chair of history in the Collége Rollin, where he was also professor of ancient languages and of philosophy till 1826. After the revolution of 1830 he was appointed chief of the historical section of the archives of France, and in 1838 became professor of history at the Collége de France. He lost all his offices at the *coup d'état* in 1851. His principal historical works are: *Histoire de France* (18 vols., 1833-66); *Histoire de la Révolution Française* (7 vols., 1847-53); *Histoire Romaine; Précis de l'Histoire Moderne; Précis de l'Histoire de France jusqu'à la Révolution; Origines du Droit Français.* He wrote also a number of works on social subjects, and after 1856 produced several books on natural history and philosophy.

Michigan (mish'i-gan) one of the north-central United States; area, 57,980 square miles. It consists of two separate peninsulas—one projecting eastward between Lakes Superior, Huron and Michigan, and bounded inland by Wisconsin; the other projecting northward between Lakes Michigan, Huron, St. Clair and Erie, and bounded on the south by Ohio and Indiana. It has upwards of 1100 miles of lake-coast, with numerous bays and excellent harbors. The northwestern peninsula, occupying nearly a third of the whole surface, is comparatively elevated, and presents a succession of mountains and lakes, plains, rivers and forests. The surface of the other peninsula is gently undulating, and rises gradually from the lakes towards its center. It is mostly covered with fine forests of timber, interspersed with plains and prairies. Agriculture is the staple industry, the chief cereals being wheat and Indian corn. Wheat of excellent quality is produced on the land cleared of timber. The remaining crops include oats, barley, buckwheat, rye, hay, potatoes, tobacco, hops, etc. In the W. and S. W. is a prolific fruit belt, and in the south grapes are grown and much wine made. After agriculture, lumbering comes next in importance, the annual yield of forest products being greater than in any other state. The cultivation of fruit trees is receiving increasing attention, and considerable quantities of apples and peaches are exported. The mines in the northwestern peninsula contain vast supplies of magnetic and hematite iron ore, of unrivaled purity and excellence, from which are obtained great quantities of iron. Here also are seated very rich copper mines, the copper often occurring in large masses of pure metal. Salt of unsurpassed purity occurs in a basin extending over 8000 square miles. It is obtained from artesian wells and the yield is large, being more than double that of New York. Manufacturing industries are varied and important. The commerce of the state is greatly benefited by its large navigable waters and by its extensive system of railways, which measure about 9000 miles. The capital is Lansing, but the commercial metropolis and much the largest city is Detroit, Grand Rapids being next in size. In the primary schools education is free, but a fee may be required for advanced studies in higher schools. At the head of the educational institutions is the Michigan University, situated at Ann Arbor. The first settlements in Michigan were made by the French. It was included in the territory surrendered by Britain to the United States after the Revolutionary war. Michigan became a State of the Union in 1837, at which date it had 174,647 inhabitants. Pop. 2,810,173.

Michigan City, a city of Laporte County, Indiana, situated on Lake Michigan, about 38 miles E. S. E. of Chicago. It contains the Northern State Prison. It has important manufactures, including railroad cars, chairs, furniture, hosiery, gloves, etc. Its lake commerce and lumber trade are leading interests. Pop. 19,027.

Michigan, LAKE, the second largest of the great lakes of North America. It is wholly within the United States, having the State of Michigan on the east and northwest, Wisconsin and Illinois on the west, and Indiana on the south. On the northeast it communicates with Lake Huron by the narrow strait of Mackinaw. It is 350 miles long, and on an average 60 miles broad; area, estimated at 26,000 sq. miles. The lake is 578 feet above sea level; the greatest ascertained depth is about 1000 feet.

Michoacan (mē-chō-a-kän'), one of the States of Mexico, on the Pacific Coast; area, 22,656 sq. miles,

It is to a large extent elevated and mountainous, among the mountains being the volcano of Jorullo. It has rich mines of gold, silver, and other minerals. Capital Morelia. Pop. 991,649.

Mickiewicz (mits-kyä'vich), ADAM, a Polish poet; born in 1798; died in 1855. He wrote several epics, and is regarded as the chief national poet of his country.

Mickle (mik'l), WILLIAM JULIUS, poet, born in Dumfriesshire, Scotland, in 1734; died in 1788. At first he engaged in business as a brewer, but not succeeding he devoted himself to literature, and removed to London in 1764. In 1775 appeared his principal production, a translation of the *Lusiads* of Camoens. Among the best of Mickle's original productions is the ballad of *Cumnor Hall*, which suggested to Sir Walter Scott the subject of his novel of *Kenilworth*.

Micmacs (mik'makz), a tribe of North American Indians, mostly inhabiting New Brunswick and Nova Scotia, and numbering some 3600. Their language has been reduced to writing, and a dictionary of it has been compiled.

Microbes. See *Germ Theory*.

Micrometer (mī-krom'e-tėr), an instrument used with a telescope or microscope, for measuring very small distances. Micrometers are variously constructed but in perhaps the most common form (the *filar micrometer*) the principle of operation is that the instrument moves a fine thread or wire parallel to itself in the plane of the image of an object, formed in the focus of a telescope, the wire or thread being moved by means of delicate screws with graduated heads, so that the distance traversed by the wire can be measured with the greatest precision. The micrometer is of the utmost value to the astronomer, and in trigonometrical surveys, and military and naval operations.

Microphone (mī'kru-fōn), an instrument to make faint sounds more audible, invented by David Hughes in 1878. The most sensitive conductor of sound is willow-charcoal, dipped when at white heat into a bath of mercury. A piece of charcoal, thus prepared, placed vertically between two carbon-blocks which are connected with a telephone, is a common form of microphone, and magnifies sounds, otherwise inaudible, enormously.

Microscope (mī'kru-skōp), an optical instrument consisting of a lens or combination of lenses (in some cases mirrors also) which magnifies objects that cannot be seen by the naked eye, or enlarges the apparent magnitude of small visible bodies, so as to permit the study of their minute texture or structure. For a good microscope an achromatic combination of lenses to form an object-glass and a well-made eyepiece are necessary. The magnifying power of an instrument may be increased by (1) increasing the magnifying power of the object-glass; (2) increasing the power of the eyepiece; (3) increasing the distance between the objective and the eyepiece. The single or simplest form of microscope is nothing more than a lens or sphere of any transparent substance, in the focus of which minute objects are placed. When a microscope consists of two or more lenses, one of which forms an enlarged image of objects, while the rest magnify that image, it is called a *compound microscope*. A *binocular microscope* is a microscope with two tubes starting from a point above the object-glass, which is single, and gradually diverging to fit the eyes of the observer. The rays of light arising from the object under observation are caused to diverge into the two tubes by a prism. A *solar microscope* has a reflector and a condenser connected with it, the former being employed to throw the sun's rays on the latter, by which it is condensed to illuminate the object placed in its focus. A *lucernal microscope* is the same in principle as the solar, except that a lamp is used, instead of the sun, to illuminate the object. When an oxyhydrogen lime-light is used it is called an *oxyhydrogen microscope*.

Binocular Microscope.

Microtasimeter (mī-kru-ta-sim'e-tėr), an instrument for measuring extremely small variations in the expansion or contraction caused by heat, moisture, etc. It has been used by astronomers to indicate the altered radiation of heat from the sun during an eclipse or when the atmosphere is filled with moisture.

Midas (mī'das), in Greek mythology, king of Phrygia, whose request that whatsoever he touched should turn to gold was granted by the god Diony-

sus (Bacchus). In this way even his food became gold, and it was not until he had bathed in the Pactolus that the fatal gift was transferred to the river. Another legend is that, in a musical contest be-

Tomb of Midas, Phrygia.

tween Pan and Apollo, Midas, who was umpire, decided in favor of the former; whereupon the angry Apollo bestowed upon the presumptuous critic a pair of ass' ears.

Middelburg (mid'l-burg), a town of Holland, capital of the province of Zeeland, near the middle of the island of Walcheren; a well-built and remarkably clean town. It is an ancient place, and was taken by the Dutch from the Spaniards in 1574. Pop. (1903) 19,002.

Middle Ages, a term applied loosely to that period in European history which lies between the ancient and modern civilizations. With some writers the period began when the western Roman Empire was overthrown by Odoacer in 476; with others when Charlemagne was crowned emperor of the West in 800; while yet others make it begin when the Frankish Empire ended in 843. The end of the period is variously conceived to have closed with the Reformation in Germany; with the discovery of America by Columbus; with the invention of printing; and with the end of the Thirty Years' war in the Peace of Westphalia (1648). The outstanding political events of the Middle Ages include the rise of the German, French and Italian nationalities; the rise of the Norman power, and the conquest of England by William of Normandy; the crusades; and the establishment of the Holy Roman (or German) Empire. The feudal system and the power of the papal hierarchy were widespread.

Middleboro (mid'l-bur-o), a town of Plymouth County, Massachusetts, 34 miles S. by E. of Boston. It has manufactures of boots and shoes, lumber, woolens, varnish, tiles, etc. Pop. 8214.

Middlesboro, a city of Bell County, Kentucky, about 46 miles N. of Knoxville, Tennessee. It has coal, coke and iron works and distilling interests. Pop. 7305.

Middlesbrough (mid'lz-b'ruh), a river port of England, in the North Riding of Yorkshire, 6 miles from the mouth of the Tees and 44 miles north of York. In 1829 the site of Middlesbrough was occupied by a solitary farmhouse. Its rapid growth has been due to its suitability as a port for the Durham coal fields, and to the smelting of the iron ore abounding in the adjacent Cleveland Hills, an industry begun in 1840, and especially associated with the names of Bolckow and Vaughan. There are numerous blast furnaces and rolling mills, foundries, engineering works, shipyards, nail works, bolt and nut works, etc. Salt is being extensively worked also, there being a thick bed of rocksalt at a depth of 1300 feet. The streets are well laid out, and there are the usual institutions of a modern and progressive town. The docks are extensive and commodious. Pop. 104,787.

Middlesex (mid'l-seks), the metropolitan county of England, one of the smallest in the kingdom, but among the most important, from its containing the greater portion of the city of London; area, 283 sq. miles. The surface is flat, except the slight eminences, Hampstead, Highgate and Harrow-on-the-Hill, on the north side of London. The chief river is the Thames, forming the southern boundary. The soil is mostly gravelly, not naturally fertile, but enriched in the vicinity of London by a profuse application of fertilizers. Pop. (1911) 1,126,694.

Middle Temple. See *Inns of Court.*

Middleton (mid'l-tun), a town of England, in Lancashire, 6 miles N. of Manchester and 3½ miles W. of Oldham. Extensive cotton, silk, and other works employ a large part of the inhabitants. Pop. (1911) 27,983.

Middleton, Conyers, an English writer, born in 1683; died in 1750. He became a student, and in 1706 a fellow of Trinity College, Cambridge. He is best known as the author of a *Life of Cicero* (1741), and a *Free Inquiry into the Miraculous,* the latter

causing its author to be regarded as an infidel.

Middleton, THOMAS, an English dramatist, born about 1570; died in 1627. Little is known of his life except that he lived in London, and was employed to write court masques and pageants while he held the office of city chronologer. He wrote the comedies of *A Trick to Catch the Old One*, *The Family of Love*, *The Phœnix*, *Michaelmas Term*, *A Mad World My Masters* and *The Witch*, which is supposed to have suggested some of the witch scenes in Macbeth. He was also associated with Rowley in the production of *The Fair Quarrel* and *The Changeling*, while he wrote *The Widow* along with Fletcher and Jonson.

Middletown (mid'l-toun), a city of Connecticut, one of the capitals of Middlesex County, on the W. bank of Connecticut River, 14 miles S. of Hartford. It contains a State Hospital for the Insane, the Berkeley Divinity School (Episcopal), and the Wesleyan University (Methodist), also an Industrial School for Girls. It has active manufactures, producing hydraulic machinery, woolens, cottons, silk, hardware, etc. Opposite, beyond the river, is Portland, where the celebrated Portland sandstone is quarried. Pop. 20,749.

Middletown, a city of Orange County, New York, 24 miles W. S. W. of Newburgh. Here is a State Hospital for the Insane (Homœopathic). There is a very large tannery, condensed milk and farm implement works, also iron, hat, blanket and saw factories. It has several collegiate institutions. Pop. 15,313.

Middletown, a city of Butler County, Ohio, on the Miami River and the Miami and Erie Canal, 34 miles N. of Cincinnati. It has a number of large paper mills, and a large cigar factory; also foundries, machine shops, engine, carriage and paper box factories. Pop. 13,152.

Middletown, a borough of Dauphin County, Pennsylvania, on the Susquehanna River, 9 miles S. E. of Harrisburg. There are here large car and stove works, furniture and shoe factories, hosiery and planing mills, etc. Pop. 5374.

Midgard (mid'gard), in Scandinavian mythology, the abode of the human race, formed out of the eyebrows of Ymir, one of the first giants, and joined to Asgard, or the abode of the gods, by the rainbow-bridge.

Midge (midj), the ordinary English name given to numerous minute species of flies, resembling the common gnat. The eggs are deposited in water, where they undergo metamorphosis.

Midhat Pasha (mid'hät pä'shä), a Turkish statesman, born in 1822; died in 1884. He was educated in Constantinople; entered the Turkish civil service; attracted attention by his administrative capacity; became governor of Bulgaria in 1862, and was ultimately in 1876 created grand vizier. In this position he was supreme in the palace, and caused Abdul Aziz and Murad V to be deposed. In the following year, however, he was himself banished; and in 1881, after a judicial investigation into the murder of Abdul Aziz, he was condemned and exiled to Arabia, where he died.

Midhurst (mid'hurst), a very ancient town of Sussex, England, situated on the right bank of the Rother, 46 miles southwest of London. Pop. of rural district, 15,283.

Midianites (mid'i-an-īts), an Arabian tribe, represented in the Old Testament as the descendants of Midian, son of Abraham by Keturah (Gen. xxv, 2), and described as engaged at an early period in commerce with Egypt. They dwelt in the land of Moab (Arabia Petræa), to the southeast of Canaan. One portion of them inhabited the country on the east of the Dead Sea.

Midnapur (mid'na-pör), a town of Bengal, capital of Midnapur district. It is 68 miles W. by S. of Calcutta, and has brass and copper works and an active trade. Pop. 33,140.

Midrash (mid'rash), is the general name given among the Jews to the exposition of the hidden meaning of the Scriptures. It includes any and every ancient exposition on the law, psalms, and prophets.

Midshipman (mid'ship-man), a petty officer in the navy, occupying the highest rank among the petty officers. In the United States navy the appointments for service are made from the cadet graduates of the Annapolis naval academy. Cadets are appointed to the academy on the recommendation of the members of Congress for their districts, on the same conditions that govern appointments to West Point. No person can be appointed a midshipman in the British navy until he has served at least one year as a cadet, and passed his examinations. After six years' service in all, and passing further examinations, the midshipman is promoted to the rank of sublieutenant.

Midsummer Day is the feast day of the nativity of St.

John the Baptist, and is commonly reckoned the 24th of June. On midsummer eve, or the eve of the feast of St. John, it was the custom in former times to kindle fires (called St. John's fires) upon hills in celebration of the summer solstice.

Midwifery (mid'wīf-ri), a branch of medicine or surgery, also called obstetrics, being the art of aiding and facilitating childbirth, and of providing for the preservation of the health and life of the mother during and after her delivery.

Mieris (mē'ris), Frans Van, a Dutch genre painter, born at Leyden in 1635; died in 1681. He was a favorite pupil of Gerard Dow. He preferred subjects from the life of the higher classes, excelled in painting rich stuffs, plate, and jewels, his coloring being at once clear and delicate, deep and rich. His pictures, usually of small size, bring enormous prices, and are found in all the chief galleries.—Frans Van Mieris the younger, son of Willem Van Mieris, born at Leyden in 1689; died in 1763; painted genre pictures and portraits, and published works on numismatics and history.—Jan Van Mieris, son of Frans the elder, born in 1660; died in 1690; painted portraits and historical pictures. His works are rare.—Willem Van Mieris, son and pupil of Frans the elder, born in 1662; died in 1747. He painted genre and mythological pictures, his best work representing subjects taken from ordinary life. His *Poulterer's Shop* is in the National Gallery, London, and many of his more important works are preserved at Dresden and other continental galleries.

Mignonette (min'yon-et; *Resēda odorāta*), a well-known fragrant annual plant of the nat. order Resedaceæ, a native of Egypt. It is largely cultivated in flower-pots, in apartments, and in the boxes which are placed outside windows. A sub-biennial variety, called *tree mignonette*, rather more odorous than the common sort, is well suited for the drawing-room.

Migration of Animals, the phenomenon of certain animals moving, either periodically or at irregular times and seasons, from one locality or region to another, sometimes far distant. Migration has been observed in mammals, birds, fishes, and insects, but it probably occurs in other groups of the animal world, the observation of which is less easy than that of the higher forms. The buffaloes or bisons of North America used, it would seem, to migrate in herds from one place to another. Many fishes (for example salmon, lampreys, etc.) make periodical journeys from the sea towards fresh water streams and rivers for the purpose of depositing their eggs. The migratory habits of locusts, and those of certain species of ants, etc., exemplify migration among insects; but among the birds we meet with the best marked instances of migration. With sea birds (for example, puffins), the day of arrival or that on which they appear in certain localities may be prognosticated with perfect safety; and similarly, the day of departure appears in some birds (for example, swifts) to be almost as accurately timed. Storks have been known to return regularly to their old nests, and the same has been observed of swallows. The mode in which birds migrate varies greatly even in those of the same species. The swallows migrate in bodies comprising vast numbers, and so also do cranes, wild ducks, geese, and many other forms. The migratory flight is generally made against the wind; and certain species of birds, as quails, for instance, appear to wait for favoring winds, and to delay their flight by resting on islands when the wind is unfavorable. Regarding the causes of migration, science cannot at present definitely pronounce. Probably a combination of causes, or different causes in different cases, as scarcity or plenty of food-supply, the powerful influences of temperature, and the influence of the breeding season, may contribute to the migratory 'instinct.' It has been further suggested by Mr. A. R. Wallace that this migratory habit or instinct has gradually been acquired since a time when the breeding and feeding grounds of the animals were coincident, these having been gradually separated by climate and geological changes.

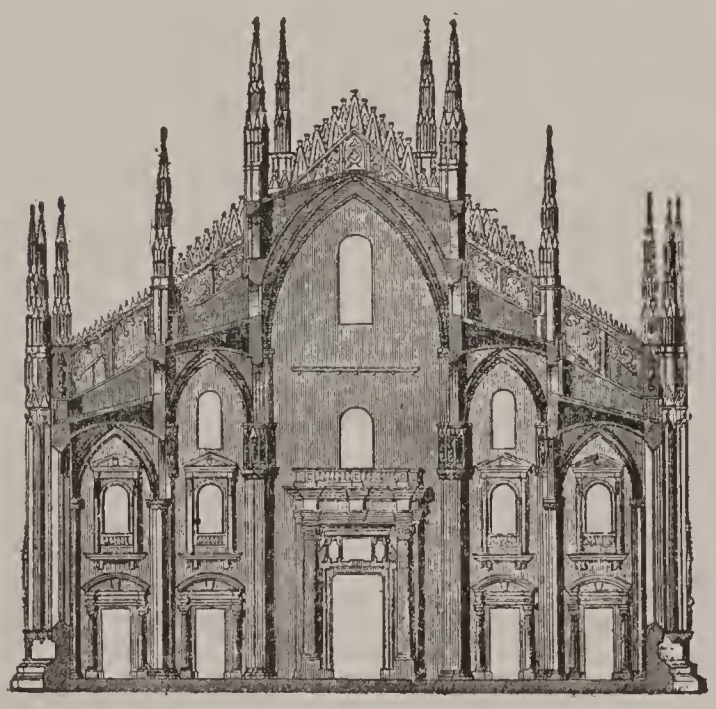
Mihrab (mih'rāb), an ornamented recess or alcove in a mosque, near the mimbar or pulpit. The people pray in front of the mibrab, which always marks the direction of Mecca.

Mikado (mi-kä'dō), the emperor of Japan, the spiritual as well as temporal head of the empire. See *Japan*.

Miknas. See *Mequinez*.

Milan (mi'lan; Italian, *Milano;* German, *Mailand;* Latin, *Mediolānum*), a city of Northern Italy, capital of the province of its own name, situated on the small river Olona, in the middle of the Lombard plain between the Adda and Ticino. The town is built in the form of an irregular polygon, and is partly surrounded by a wall or rampart,

outside of which runs a fine road shaded by chestnut trees. The city is entered by eleven gates, several of which are magnificent, and the leading streets proceeding from these gates are tolerably wide, well paved, and lighted. The chief open space is the Piazza d'Armi (Place of Arms), part of which has been made into an amphitheater capable of containing 30,000 spectators. The castle, now a barrack, fronts the Piazza d'Armi on one side; at the opposite side is the Porta Sempione with the fine Arco Sempione or Arco della Pace, built of white



Section of Cathedral, Milan.

marble. The Piazza del Duomo, in front of the cathedral, is the center of the traffic of Milan. Among the public edifices the first place belongs to the Duomo or cathedral, a magnificent structure, inferior only in size to St. Peter's at Rome and the cathedral of Seville. It is built of brick faced with white marble, and is 477 feet in length, 183 feet in width, nave 155 feet high, cupola 220 feet, tower 360 feet. The prevailing style is Gothic; in form it is a Latin cross; it is ornamented with turrets, pinnacles, and 2000 statues; and the roof is of white marble. It was begun in 1386, and was only completed in 1805. There are many other fine edifices, among them being the Palazzo di Brera or Delle Scienze Lettere ed Arte, containing the picture gallery and the library of the academy (200,000 vols.); and the Ambrosian Library, the earliest, and still one of the most valuable public libraries in Europe. The chief theater is La Scala, accommodating 3600 spectators. The manufactures include silks, cottons, lace, carpets, hats, earthenware, jewelry, etc.—The first distinct notice of Milan occurred B.C. 221, when it was subdued by the Romans. In the third century after Christ it ranked next to Rome. It became a republic in 1101, and having refused to submit to the Emperor Frederick I, it was destroyed by him in 1162. It was soon rebuilt, but long continued to be torn by internal factions, headed by the leading nobility, among whom the Visconti and Sforzas were the most prominent. At a later date it belonged, in common with Lombardy, to Austria, until 1859, when by the Peace of Villafranca Lombardy was ceded to Piedmont. Pop., including suburbs, (1906) 560,613.

Milazzo (mi-lät'zō), a seaport in Sicily, about 22 miles west of Messina. Here Garibaldi defeated the Neapolitan troops in his Sicilian campaign of 1860. Pop. 16,422.

Mildew (mil'dū), a name given to various minute parasitic fungi producing a state of disease or decay in living and dead vegetable matter, and in some manufactured products of vegetable matter, such as cloth and paper. Numerous cultivated crops, fruit trees, etc., suffer from mildew.

Mile (mīl), a measure of length or distance, and used as an itinerary measure in almost all countries of Europe. The English and American statute mile contains 8 furlongs, each 40 poles or perches, of 5½ yards. The statute mile is therefore 1760 yards, or 5280 feet. It is also 80 surveying chains, of 22 yards each. The square mile is 6400 square chains, or 640 acres. The Roman mile was 1000 paces, each 5 feet; and a Roman foot being equal to 11.62 modern English inches, it follows that the ancient Roman mile was equal to 1614 English yards, or very nearly 11-12ths of an English statute mile. The ancient Scottish mile was 1984 yards = 1.127 English miles; the Irish mile, 2240 yards = 1.273 English miles; the German short mile is 3.897 English miles, the German long mile 5.753. The geographical or nautical mile is the sixtieth part of a degree of latitude, or 2028 yards nearly.

Mileage (mīl'ij), in the United States, fees paid to certain officials, such as members of Congress, of State legislatures, etc., for their traveling expenses, at so much per mile. The system has in the past led to gross abuses, each senator and representative estimating for himself the distance he had traveled. Now, however, there is a fixed table of mileage, the total annual cost for both houses of Congress being nearly $150,000.

Miles (mīlz), Nelson Appleton, soldier, was born at Wachusetts-ville, Massachusetts, in 1839. In 1861, at the outbreak of the Civil war. he entered the service as captain of volunteers and took part in most of the principal engagements in Virginia, rising in rank to major-general of volunteers in 1865. He continued in the regular army, being made colonel in 1867, brigadier-general in 1880, and major-general in 1890, and taking part in the operations against the Apaches and other Indian tribes. He was the senior officer commanding the United States army during the Spanish war, and led in person the expedition against Porto Rico in 1898. He retired August 8, 1903. He is the author of *Personal Recollections, Observations Abroad*, and many magazine articles and military reports.

Milfoil (mil'foil), the common name of *Achillea millefolium*, nat. order Compositæ, a plant which grows commonly on banks, by road sides, and on dry pastures. It has numerous very finely divided leaves, and corymbs of small, white, or sometimes rose-colored flowers. The plant has highly astringent properties.

Milford (mil'fẻrd), or Milford Haven, a seaport in the county of Pembroke, Wales, on the north shore of the inlet called Milford Haven. There are docks capable of accommodating the largest vessels, and Milford has recently become a port for transatlantic steamers. Milford belongs to the Pembroke district of parl. boroughs. Pop. (1911) 12,038.—The inlet called Milford Haven, one of the most capacious natural harbors in Britain, is a deep indentation in the southwest coast of Pembroke, stretching about 10 miles from east to west, with a breadth of from 1 mile to 2 miles, and branching off into numerous bays, creeks and roads.

Milford, a town (township) of Worcester County, Massachusetts, containing a manufacturing village of same name, 34 miles s. w. of Boston. Here are extensive granite quarries and manufactures of boots and shoes, straw and rubber goods and machinery. Pop. of town 13,055.

Military Orders, in Europe, religious associations whose members united in themselves the double characters of monk and knight. These orders arose about the period of the Crusades, the first to be formed being the Hospitallers. Their primary duties were to tend sick pilgrims at Jerusalem, afterward to protect them also on their way to the Holy City. The order of the Templars soon followed, and to these many others were later added. These religious associations have mostly been

abolished or have fallen into disuse, though some still subsist as orders of knighthood.

Militia (mi-lish'a), a body of armed citizens regularly trained, though not in constant service in time of peace. A militia is also distinguished from volunteers in consisting of local corps raised by requisition of the State. The militia of the United States consists of volunteer organizations and all able-bodied male citizens of the age of eighteen and under forty-five, with certain exceptions provided by the national and State laws. In Britain the militia used to be drawn by lot for five years and officered by the lords-lieutenant of the counties and those appointed by them. It is now composed of voluntary recruits, though the ballot can still be enforced. In Canada the militia consists of all British male subjects between the ages of eighteen and sixty, divided into an active and a reserve force. See the articles on the different countries.

Milk, the secretion peculiar to the females of the class Mammalia, which is secreted in the mammary glands, and which is employed as the nutritive fluid of the young mammal after its birth. Examined by aid of the microscope, milk is seen to consist of a clear fluid, containing many globules, the average size of which is about $\frac{1}{10000}$ of an inch in diameter, and each appears to consist of oily matter invested by a thin layer of albumin. When churned, the globules in the milk are forced together *en masse*, and constitute butter. The cream of milk is formed by the globules rising to the top of the milk without coalescing; the 'skim'-milk, or that left after the cream is formed, being of a pale bluish color, owing to its being deprived of its fatty or oily particles. In itself, milk exhibits the type of a perfect food. The *casein* of milk represents the albuminous or flesh constituents of food; the butter supplies the fatty or oleaginous parts; the water exists as such in milk, while it contains the saccharine constituents in the form of milk-sugar, and the inorganic parts in the form of phosphates of lime and alkaline chlorides, so necessary for the production of bone. The milk of every animal has certain peculiarities which distinguish it from all other milk, but the general properties are the same in all. The specific gravity of milk varies from 1.03 to 1.04. In the making of butter, cream is allowed to stand for some time, during which an acid is generated. It is then put into a churn and agitated, when the butter gradually separates. The *butter-milk*, or that left after the separation of the butter by churning, contains the casein, sugar, etc., of the milk; and the milk left after creaming also contains the greater part of the casein and milk-sugar. Milk may be coagulated by various substances, but *rennet*, prepared from the fourth stomach of the calf, is generally used for domestic purposes. The result of coagulation is to separate the milk into a thin fluid, or *whey*, and a thick whitish deposit, the *curd*. (See *Butter*, *Cheese*.) Whey has a pleasant taste, and contains a large quantity of milk-sugar, hence it is frequently used as drink, and from its nutritious quality it is administered to delicate people. It is also sometimes made to undergo fermentation, by which a very weak spirituous fluid is obtained. (See *Koumiss*.) In some States milk is not permitted to be sold which does not contain a fair amount of the proper nutritive constituents. It has been hel that even milk wholly derived from the cow, if below the standard at which with proper feeding cow milk can reasonably be maintained, is adulterated within the meaning of the act, but no exact standard of purity has been established. Condensed milk (which see) is now largely used, and consists of ordinary milk which has undergone a process of evaporation and been mixed with sugar. Milk is very liable to be infected with the germs of disease, either from disease in the cow, contamination from unhealthy persons, or the use of infected water in cleaning vessels; and many epidemics of zymotic disease have been traced to impure milk.

Milk-fever, a febrile state sometimes induced in women when the milk begins to be secreted after parturition. It is accompanied with severe pains and throbbing in the head, flushing in the face, thirst, heat and dryness of skin. The pulse is full, the tongue furred, bowels costive, urine scanty, and light and sound are painful. The treatment consists in cooling saline purgatives, good ventilation and moderate temperature in apartments, and encouraging the free flow of milk. Other medicines may be necessary. Milk-fever attacks the lower animals, and in cows it is best prevented by unstimulating diet, and by milking the cow regularly ten days before calving.

Milk-plant. See *Jew-bush*.

Milk-snake, the *Ophiobŏlus eximius*, a harmless snake of the United States.

Milk-tree. See *Cow-trees*.

Milk-weed, a name for plants of the genus *Asclepias*.

ELECTRIC MILKING MACHINE

This remarkable device has proved thoroughly practicable, and is in use on a number of large dairy farms.

Milkwort (milk'wėrt), a pretty plant, *Polygăla vulgāris*, order Polygalaceæ, abounding in a milky juice, and believed by the ignorant to promote the flow of milk in the breasts of nurses.

Milky-way. See *Galaxy.*

Mill, originally, a machine for grinding and reducing grain or other substance to fine particles; now applied also to machines for grinding or polishing by circular motion, and especially to complicated machinery for working up raw material and transforming it into a condition in which it is fit for immediate use or for employment in a further stage of manufacture. In the first sense of the word we have *flour-mills* and *meal-mills, cider-mills, coffee-mills;* in the second sense we speak of a *lapidary's mill;* and in the third sense we speak of *cotton-mills, spinning-mills, weaving-mills, oil-mills, saw-mills, bark-mills, fulling-mills,* etc. The word commonly includes the building for the special accommodation of the machinery, as well as the machinery itself. The oldest kind of flour or meal mill was the handmill or *quern* (which see). See also *Grinding.*

Mill, James, born at Logie Pert, Forfarshire, Scotland, in 1773; died in 1836. He was educated at the grammar school of Montrose and the University of Edinburgh; received license as a preacher, but abandoned this profession as the result of a change in his theological opinions; accompanied Sir John Stuart to London and became tutor in his family; edited the *Literary Journal,* and contributed articles to the various reviews; also writing a *History of British India.* In consequence of the knowledge which his researches had given him of Indian affairs, he was appointed assistant-examiner of correspondence by the East India Company, and soon afterwards became chief-examiner. He was a large contributor to the *Westminster Review;* wrote articles on social and political subjects for the *Eneyelopedia Britanniea;* published a treatise on the *Elements of Politieal Eeonomy* (1821-22), and an able *Analysis of the Phenomena of the Human Mind* (1829), etc.

Mill, John Stuart, son of James Mill, was born in London in 1806; died at Avignon in 1873. He was trained under the immediate influence of his father, and at the age of three began to study the Greek alphabet, while at eight he was studying Herodotus, Xenophon, and Plato, and entering upon a course of Latin, Euclid and algebra. At the age of fourteen he entered upon a course of political economy, and thereafter this strenuous education of the boy ceased—so far, at least, as the strict surveillance of his father was concerned. It left a deep influence, however, upon his subsequent life and labors. His fifteenth year was spent in France; on his return he studied law for a time, and in 1823 he obtained a clerkship in the East India House, remaining in the company's employment till it was supplanted by the crown in 1858. In 1823 the *Westminster Review* was begun by the followers of Bentham, and young Mill was one of its earliest contributors, while from 1835 to 1840 he was its principal conductor. In his twenty-first year he edited Bentham's work *On Evidenee.* In 1843 appeared the first of his two chief works, *A System of Logic, Ratioeinative and Indue-tive,* the second being *Prineiples of Politieal Eeonomy,* 1848. To these he afterwards added his work *On Liberty,* 1859; *Thoughts on Parliamentary Reform,* 1861; *Utilitarianism,* 1862; the *Examination of Sir William Hamilton's Philosophy,* and a *Study of Auguste Comte and Positivism,* 1865. In this last year he was returned to parliament as member for Westminster, where he advocated a measure to admit women to the suffrage, took part in the Reform Bill debates, etc. At the election of 1868 he was defeated and retired to Avignon. Besides the works already mentioned he published *Considerations on Representative Government,* 1861; *The Subjeetion of Women,* 1869; and *The Irish Land Question,* 1870. His *Autobiography* was published in 1873, and the three essays, *Nature, The Utility of Religion* and *Theism,* in 1874. Mill's works on logic and political economy are standard text-books. In the former he placed the system of inductive logic on a firm basis. See *Logie.*

Millais (mil'ās), Sir John Everett, was born at Southampton in 1829. He gained his first medal for drawing when nine years old; became a student at the Royal Academy; exhibited his first picture, *Pizarro Seizing the Inca of Peru,* in 1846; and received the gold medal for an historical painting, *The Tribe of Benjamin Seizing the Daughters of Shiloh,* in 1848. In his earlier days he was a leader of the Pre-Raphaelite School, but on attaining maturity in art he abandoned the peculiarities for which that school is noted. As the result of this new departure Millais painted such pictures as *Ferdinand Lured by Ariel, Mariana in the Moated Grange, The Huguenot Lovers, The Black Brunswieker* and *Ophelia,* while its influence was also apparent in his landscapes of *Chill October, The Fringe of the Moor,*

etc. Among his later works are, *The Northwest Passage*, *The Prineess in the Tower*, *Effie Deans*, *Cinderella* and *Merey—St. Bartholomew's Day, 1572.* In portraiture he held the foremost rank,

Sir John E. Millais, R.A.

and painted a number of the most distinguished men of his day. He was made a baronet in 1885, and was decorated with the Legion of Honor. Many of the works of Millais are well known by engravings. He died in 1896.

Millau (mē-yō), a town of Southern France, department of Aveyron, 31 miles southeast of Rodez. It has coal mines, manufactures of leather, leather gloves, silk mills. Pop. (1906) 16,853.

Milledgeville (mil'ej-vil), a city, capital of Baldwin Co., Georgia, and formerly capital of the State. It is situated on the Oconee River, 32 miles N. E. of Macon. Here is the Georgia Military College and Normal and Industrial School, and two miles distant the State Lunatic Asylum. It has grist and cottonseed-oil mills, etc. Pop. 4385.

Millennium (mil-en'i-um), an aggregate of a thousand years; a word used to denote the thousand years mentioned in Rev. xx, 1-5, during which period Satan will be bound and restrained from seducing men to sin, and during which, millenarians believe, Christ will reign on earth with his saints. The near approach of the millennium has been often foretold.

Millepede (mil'i-pēd; L. *mille*, a thousand, *pes*, *pedis*, a foot), a name common to animals resembling centipedes, of the order Myriapoda, from the nu ber of their feet. The most common is the *Iūlus sabulōsus*, about 1¼ inches long. The young when hatched have only three pairs of legs, the remainder being gradually acquired till the number is complete, which is usually about 120 pairs.

Millepora (mil-ep'o-ra), MILLEPORIDÆ, a genus and family of reef-building branching corals.

Miller (mil'er), HUGH, geologist, was born at Cromarty, Scotland, in 1802, and became a stone-mason. While working at his trade he studied literature, wrote a good deal, and in particular became proficient in geology. His first publication appeared in 1829, under the title of *Poems Written in the Leisure Hours of a Journeyman Mason*, and this was followed in 1835 by the prose volume of *Scenes and Legends of Cromarty.* He was then appointed to a post in a bank at Cromarty, and while employed in this capacity took an active part in the religious controversy that ended in the Disruption (which see). In 1840 he went to Edinburgh as editor of the *Witness* newspaper, after 1843 the chief organ of the Free Church. In this paper he printed the work subsequently published under the title of *The Old Red Sandstone*, which attracted the immediate attention of the scientific world and established his reputation as a geologist. This was followed by *First Impressions of England and its People; Schoolmasters*, a charming account of his earlier life; and *The Testimony of the Roeks*, in which he tried to reconcile the Mosaic account of creation with the teachings of geology. Having just finished this latter work, his brain collapsed from over-pressure, and he died by a pistol-shot from his own hand at Portobello in 1856. His *Sehools and Schoolmasters* was supplemented by *Life and Letters*, published in 1871. Besides the volumes already mentioned, his collected works include *Essays Historieal and Critieal; The Cruise of the Betsy; Rambles of a Geologist; Tales and Sketches; Edinburgh and its Neighborhood* and *The Headship of Christ.*

Miller, JOAQUIN, the pen name of Cincinnatus Heine Miller, born in Indiana in 1841. He spent some time in the California mining districts; lived with the Modoc Indians for five years; edited a newspaper called the *Democratie Register;* studied law and was called to the bar in Oregon, and became district judge in Canon City. He subsequently settled in New York. He has written *Paeific Poems* (1873), *Songs of the Sierras* (1873), *Songs of the Sun Lands* (1873), *Ship of the Desert* (1875), besides novels and dramas, and is noted for his graphic pictures in verse of frontier life and incident.

Miller, JOSEPH, better known as JOE MILLER, was born in 1684, it is supposed in London, and was a favorite low comedian. He died in 1738. The jests which have immortalized his name were collected in 1738 by John Mottley, author of the life of *Peter the Great* and other works.

Miller, PATRICK, born at Dalswinton, Scotland, in 1730; died in 1815. He patronized Burns, and as early as 1785 made experiments in steam navigation.

Miller, WILLIAM, line engraver, born at Edinburgh, in 1796; died there in 1882. He studied engraving at Edinburgh and also under George Cooke in London, after which he settled down at Edinburgh. His work was much appreciated by Turner, and he engraved many plates after that master. He also engraved important figure subjects after George Harvey, and landscapes after Horatio M'Culloch. In perfectness of tone, and in expressing by line stormy skies and the fluid quality of water, stormy seas, and still rivers, his work is exceptionally excellent.

Miller, WILLIAM, a religious enthusiast, was born in Pittsfield, Massachusetts, in 1782; died in 1849. He studied the prophecies of the Bible and in 1831 predicted the second coming of Christ and that the world would be destroyed in 1843. Hundreds of people became converts to his belief and prepared for their ascent to heaven on the day appointed. There are still believers in his doctrine, known as Millerites or Second Adventists.

Miller's Thumb. See *Bullhead.*

Millet (mil'et), a common name for various species of cereals yielding abundance of small seeds, more particularly called *Panicum miliaceum* and *P. miliare*, cultivated in the East Indies, China, Arabia, Syria, Egypt, etc., where it is used as human food. The leaves and panicles are given both green and dried as fodder to cattle. *German millet* (*Setaira germaniea*) is cultivated on account of its seeds, which are used as food for cage-birds. *Italian millet* (*Setaria italica*) is a closely allied species. For other grains known as millet, see *Dhurra* and *Dukhn.*

Millet (mi-lā), JEAN FRANÇOIS, a French artist, born at Gruchy, near Cherbourg, in 1814; died in 1875. He worked with his peasant father in the fields; studied drawing at the academy of Cherbourg; from thence passed with an allowance from this town to the atelier of Delaroche, in Paris, and exhibited at the Salon in 1840. As a student and until the death of his first wife, in 1844, he was frequently in the greatest poverty, and his life subsequently was by no means free from difficulty. In 1849 he left Paris and settled among the peasants of Barbizon, on the edge of Fontainebleau Forest, and devoted himself to transferring their simple everyday life to his canvases, which he did with great truth of sentiment and subdued poetic charm. Of his paintings may be mentioned *The Sheep-shearers*, *The Gleaners*, *The Sower*, *The Shepherdess with Her Flock* and *The Angelus.* The last named has attracted special attention, and his pictures are highly esteemed and sell at enormous prices.

Milliard (mil'yard), the French collective name for a thousand millions; familiar in connection with the five milliards of francs (5000 millions of francs, or $1,000,000,000) paid by France as war indemnity to Germany in 1871-1873.

Milligramme (mil'i-gram), in the system of French weights and measures, the thousandth part of a gramme, or .0154 of an English grain.

Millimetre (mil'i-mē-tėr), a French lineal measure containing the thousandth part of a meter; equal to .03937 of an inch.

Millvale (mil'vāl), a town of Allegheny County, Pennsylvania, on the Allegheny River, opposite Pittsburgh, with which it is connected by a bridge, and contiguous to Allegheny City, now part of Pittsburgh. It has lumber mills, and manufactures of saws, boxes, etc. Pop. 7861.

Millville (mil'vil), a city of Cumberland County, New Jersey, on the Maurice River, at the head of navigation and on the West Jersey R. R., 40 miles S. by E. of Philadelphia. It has a number of glass factories, also a cotton mill, wrapper and shirtwaist factories, and other industries. It is a shipping center for fish and produce. Pop. 12,451.

Milman (mil'man), HENRY HART, born in London in 1791; died in 1868. He was educated at Dr. Burney's Academy, Greenwich, at Eton and at Oxford. In 1812 he received the Newdegate prize for an English poem on the Apollo Belvidere; published *Fazio*, a tragedy, which was performed at Covent Garden Theater; and in 1815 was appointed vicar of St. Mary's, Reading. He delivered the Bampton lectures in 1827; became professor of poetry at Oxford, 1821-31; appointed rector of St. Margaret's, Westminster, in 1835, and dean of St. Paul's in

1849. His principal works are: *Samor*, a legendary poem (1818); *The Fall of Jerusalem* (1820); *The Martyr of Antioch* (1821); *History of the Jews* (1829); *History of Latin Christianity* (1855), etc. His last work was the *Annals of St. Paul's Cathedral*, which, after his death, was completed and published by his son.

Milne-Edwards (mil'n-ed'wârdz), Henri, a French naturalist, the son of English parents, was born at Bruges in 1800; died in 1885. He studied medicine and received his degree in Paris; succeeded Cuvier at the Academie des Sciences in 1838; was appointed professor of natural history at the Muséum in 1841; professor of zoology in 1862. He published *Elements of Zoology*, *Natural History of Crustaceans*, etc., but his great work was *Leçons sur la Physiologie et l'Anatomic Comparée* (1857-83, 14 vols.).

Milo. See *Melos.*

Milreis (mil'rēs), a Portuguese coin, equal to one thousand *reis*, or a little over one dollar.

Milt. See *Spleen.*

Miltiades (mil-tī'a-dēz), an Athenian general of the fifth century B.C. When Greece was invaded by the Persians he was elected one of the ten generals, and drew up the army on the field of Marathon, where, B.C. 490, he gained a memorable victory. Next year he persuaded the Greeks to intrust him with a fleet of seventy vessels, in order to follow up his success. With this, to gratify a private revenge, he attacked the island of Paros, but was repulsed, and dangerously wounded. On his return to Athens he was impeached, and condemned to pay a fine of fifty talents. Being unable to pay, he was thrown into prison, where he soon after died of his wound.

Milton (mil'ton), John, a famous English poet, the son of John Milton, scrivener, London, was born in the metropolis in 1608; died there in 1674. His father had him carefully educated, and at the age of seventeen he entered Christ's College, Cambridge, where he resided for seven years, took his B.A. and M.A. degrees, and excelled in Latin verse and English composition. It had been intended by his parents that he should enter the church, but their puritanical beliefs and his own scruples regarding the oaths decided otherwise. During this period were written: *On the Death of a Fair Infant* (1625-26); *On the Morning of Christ's Nativity* (1629); *On Shakespere* (1630); *On Arriving at the Age of Twenty-three* (1631); and the *Epitaph on the Marchioness of Winchester*. Leaving the university, he went to reside with his father, who had retired to Horton in Buckinghamshire, and here he remained for the following six years. In this leisured retreat he studied classical literature, philosophy, mathematics and music. To this period belong his Latin hexameters *Ad patrem;* the fragment called *Arcades; L'Allegro* and *Il Penseroso;* the beautiful monody of *Lycidas*, occasioned by the death of his

John Milton.

college friend, Edward King; and the pastoral masque of *Comus*, played before the Earl of Bridgewater at Ludlow Castle in 1634. In 1637, on the death of his mother, he made a continental journey, in which he visited Paris, where he was introduced to Grotius; Florence, where he met Galileo; and Rome and Naples. After remaining abroad for fifteen months he returned to England. His *Italian Sonnets* and some other pieces were written during this journey. The home at Horton having been broken up, Milton settled in the metropolis, and undertook the education of his two nephews, the sons of his sister, Mrs. Phillips, and to these, betimes, were added the sons of a few personal friends who boarded or received daily lessons at his house in Aldergate Street. While settled here his *Paradise Lost* was partially sketched out, but the immediate fruits of his pen were (1641-42) vigorous polemical treatises entitled *Of Reformation Touching Church Discipline in England; Of Prelatical Episcopacy; Animadversions Against Smectymnuus; The Reason of Church Government;* and the *Apology for the Animadversions.* In the summer of 1643 Milton married Mary Powell, the daughter of a royalist family. Divided from

her kinsfolk by politics, he was also dissimilar to his wife in age—she being little more than seventeen, while he was thirty-five. Moreover, she found his habits austere and his house dull, with the result that she returned to her father about a month after marriage. Milton quickly made his private trouble a plea for public protest against the marriage laws in his pamphlets on the *Doctrine of Divorce*, *The Judgments of Martin Bucer*, *Tetrachordon* and *Colasterion*. In the end, however, his wife returned in 1645, bore him three daughters, and continued to live with him until her death in 1653. Besides his pamphleteering he was at this time occupied in publishing the first edition of his *Minor Poems in Latin and English* (1645), with no apparent recognition of his claims as a poet. In connection with his divorce pamphlets he was prosecuted by the Stationers' Company for having published them without license or registration. His answer to this was the famous *Areopagitica*, a speech for the liberty of unlicensed printing, which he addressed to the parliament of England. When in 1649 Charles I was executed and a republic established, Milton avowed his adherence to it in his pamphlet *Tenure of Kings and Magistrates*, and was appointed foreign (Latin) secretary to the commonwealth. While occupying this position he wrote in 1649 *Eikonoklastes* ('Imagebreaker') in answer to the *Eikon Basilikē* (which see), and his *Pro Populo Anglicano Defensio* ('Defense of the People of England'), the latter in answer to Salmasius of Leyden, who had vindicated the memory of the late king. In this literary task his eyesight suffered so much that in 1652 he became totally blind. Nevertheless he continued Latin secretary with the assistance of Andrew Marvell, and dictated some of Cromwell's most important despatches. Upon the death of the latter, and in the confusion which resulted, Milton in 1659 wrote his *Ready and Easy Way to Establish a Free Commonwealth*. But when Charles II was restored a few months later, the blind politician remained in hiding, his books were burned by the common hangman, and he himself narrowly escaped the scaffold. He had married a second wife in 1656, who fifteen months after had died in childbirth; in 1663 he married a third time, and began the writing of *Paradise Lost*. This was published in 1667, the publisher agreeing to pay the author £5 down and a further £5 after the sale of each edition of 1300 copies. The published price was three shillings, and the poem was at first in ten books. In two years a second edition, now arranged into twelve books, was printed, and Milton's position as the greatest poet of his time was established. In 1670 there appeared his *History of Britain to the Norman Conquest*, and in the following year the continued vigor of his poetic faculty was shown in *Paradise Regained* and *Samson Agonistes*. In 1674, the last year of his life, he printed his *Epistolæ Familiares* and *Prolusiones Oratoriæ*. His death took place at his house in Bunhill, and he was buried in the church of St. Giles, Cripplegate.

Milton, a town of Norfolk County, Massachusetts, on the Neponset River, 8 miles S. of Boston. Fine granite is quarried here and there are paper mills, cement, wax and tallow factories, etc. Pop. 7924.

Milton, a town of Northumberland County, Pennsylvania, on the west branch of the Susquehanna, 13 miles above Sunbury. It has steel and iron works, car and knitting factories, saw and planing mills, nail and washer works. Pop. 7460.

Miltwaste. See *Scale-fern*.

Milwaukee (mil-wą'kē), chief city and port of Wisconsin, on the west shore of Lake Michigan, which here receives the united rivers Milwaukee and Menominee. The chief residence portion of the town occupies a high bluff overlooking the lake, above the busy valleys along the streams. Among the chief buildings of the city are the federal building, court-house, post-office, two cathedrals, art gallery, free library and museum. The harbor is one of the best on the great lakes, and the largest vessels can come close up to the warehouses. Its transportation facilities have made it one of the chief manufacturing and commercial centers of the lake region, the chief articles of its large commerce being grain, flour and lumber. Its grain elevators have a very large capacity, and its flour mills rank in size next to those of Minneapolis. Beer brewing is an immense industry, and there are extensive industrial establishments connected with iron, leather, agricultural implements, and various other articles. Pop. 373,857.

Mimbar (mim'bär), the pulpit in a mosque. See *Mosque*.

Mime (mīm), a kind of dramatic performance common among the ancient Greeks and Romans. Mimes appear to have originated among the Greek colonists of Southern Italy, and consisted first of extemporary representations at festivals of ludicrous incidents of common life, but were afterwards more artistically developed. The Roman mimes

were not unlike modern pantomime, but frequently indecent.

Mimeograph (mim'ē-u-graf), an instrument by which copies of any document may be transcribed and multiplied, through the use of a stencil made of thin paper prepared with paraffine or similar substance, which is put upon an ordinary typewriting machine, and receives the impression of the letters in the ordinary way.

Mimicry (mim'ik-ri), in biology, the name given to that condition or phenomenon which consists in certain plants and animals exhibiting a wonderful resemblance to certain other plants or animals, or to the natural objects in the midst of which they live. This peculiar characteristic is generally the chief means of protection the animal has against its enemies. It is well seen in the leaf-insects (Phyllium), also in the 'walking-stick' insects (Phasmidæ). Certain tropical butterflies reproduce the appearance of leaves so closely that even the parasite fungi which grow upon the leaves are imitated. So also a South American moth has a most accurate resemblance to a humming-bird; while the cacti of America and the euphorbias of Africa might easily be mistaken for each other, though widely different in structural characters. The theoretical explanation of this mimetic quality is attributed by recent biologists to purposes of self-preservation. Thus, the form or color which enables an animal to seize its prey easily and to protect its own life by deceptive resemblance to other objects, is conceived to be that form and color which is most likely to aid in its survival. The term is used in a merely metaphorical sense, and implies no act of volition on the part of the animal or plant, being simply a result of natural selection.

Mimnermus (mim-ner'mus), an ancient Greek poet and musician, who was probably born at Smyrna, and flourished from about 630 to 586 B.C. His poems were burned by the Byzantine monks, and only a few fragments belonging to a poem called *Nanno* have come down to us.

Mimosa (mī-mō'sa), a genus of leguminous plants, type of the subdivision Mimoseæ. See *Sensitive Plant.*

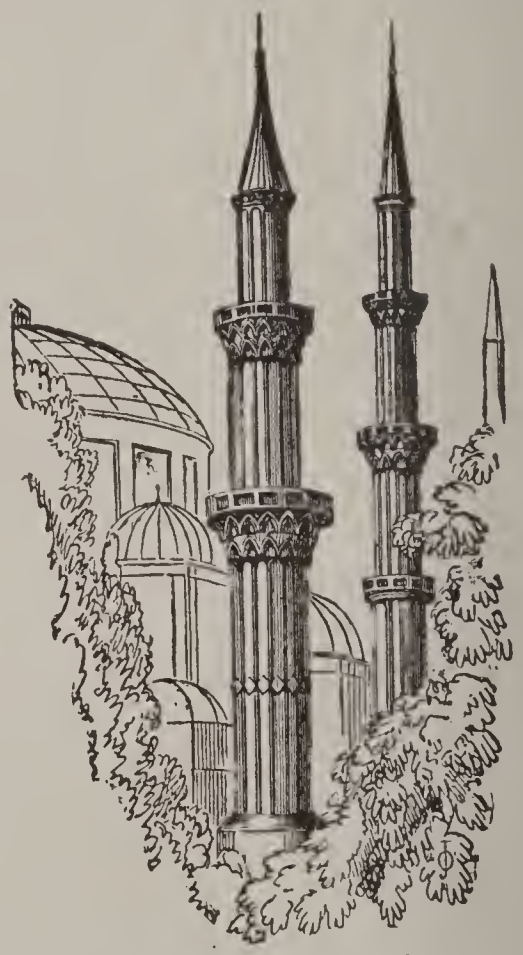
Mimulus (mim'u-lus), a genus of plants, nat. order Scrophulariaceæ. There are about forty species, natives of extratropical and mountainous regions of Asia, Africa, Australia and America. They have often handsome red, yellow, or violet flowers. *M. moschūtus* is the musk plant of gardens. Others are favorite flowers.

Mimusops (mī-mū'sopz), a genus of large, milky-juiced tropical trees common to both hemispheres. See *Bullet-tree.*

Mina (mī'na), among the Greeks, a weight of 100 drachmæ; also, a piece of money valued at 100 drachmæ. The Attic mina (sixty of which make a talent) was about $20, the Æginetan mina, $23.40.

Mina Bird. See *Grakle.*

Minaret (min'a-ret), a slender lofty turret rising by different stages or stories, surrounded by one or more projecting balconies, commonly attached to mosques in Mohammedan countries, and frequently of very elegant design. Minarets are used by the priests for summoning from the balconies the people to prayers at stated times of the day; so that they answer the purpose of belfries in Christian churches.



Minarets—Mosque of St. Sophia, Constantinople.

Minas Geraes (mē'nàs je-rä'es), the most populous province of Brazil, bounded by Bahia, Espirito Santo, Rio de Janeiro, Sao Paulo and Goyaz; area, 221,861 square miles. It forms a high plateau varied by hills, and the climate is temperate and healthy, except along the swampy riversides. It is

rich in minerals; sugar-cane, cotton, millet, tobacco, and coffee are cultivated; timber is abundant. The chief town is Ouro-Preto. Pop. 3,594,471.

Mincio (min'chō; *Mincius*), a river of Italy, which flows from the south extremity of Lake Garda, and after forming the lake and marshes that surround Mantua falls into the Po, 8 miles below the city. The length of its course is 42 miles.

Mind (mīnd), a term that admits of no exhaustive scientific definition, but may be said to indicate, generally, the power possessed by each of us in virtue of which we know, think, feel and will. Limited to the individual, and varifiable only through individual experience, its phenomena have long been held to represent the immaterial as distinguished from the material world, *mind* and *matter* forming thus a direct antithesis. Yet we have no experience of mind as apart from matter, and many, instead of regarding mind as a separate entity, hold it rather to be akin to some function of the nervous system. The mental powers or functions are generally classed as three—intellect or understanding, emotion or feeling, and volition or will. Sometimes the term mind is specially given to the first (the intellect), which itself possesses several powers or capacities, such as perception, memory, reasoning, imagination. It is by the intellect that we acquire knowledge, investigate phenomena, and combine means to ends, etc., but the ultimate analysis of our mental powers gives different results with different investigators, the classification of the faculties of the mind being thus very various. The science that has specially to do with the investigation of mental phenomena is generally known as psychology. See also *Emotion*, *Imagination*, *Will*, etc.

Mindanao (mēn-da-nä'ō), one of the Philippine Islands, next to Luzon in point of size, about 300 miles long and 105 broad; area, 36,292 sq. miles. The Americans occupy the north portion of the island, the remainder being under native rulers, of whom the Sultan of Mindanao is the chief. All the country, except upon the seacoast, is mountainous, the volcano of Apo being 8819 feet high. Some coffee, cocoa and cotton are exported. The chief town is Zamboanga or Samboangan, a port and naval station at its western extremity. Pop. 499,601, of whom 252,940 are in a state of savagery.

Minden (min'den), a town of Prussia, province of Westphalia, on the Weser, 35 miles W. S. W. Hanover. It has a fine cathedral of the thirteenth century, and manufactures of tobacco, chemicals, etc. The French were defeated here during the Seven Years' war (1759) by an Anglo-Hanoverian army. Pop. 25,428.

Mindoro (mēn-dō'ro), one of the larger of the Philippine Islands, situated south of Luzon, from which it is separated by the Strait of Manila; about 110 miles long by about 53 broad. It is evidently volcanic, the climate is hot, and the rain almost incessant. Rice, cacao and wild cinnamon are among the products. Pop. 28,361.

Mine (mīn), in military language a subterranean passage dug under the wall or rampart of a fortification, or under any building or other object, for the purpose of blowing it up by gunpowder or other explosive. What are called *submarine mines* are now used in the defense of places liable to attack from a naval force. Such a mine consists of a charge of some powerful explosive inclosed in a suitable case, which is anchored at the bottom of the water, or at a suitable depth, and may be exploded at will by means of electricity so as to blow up a hostile vessel, or the mere contact of a vessel may cause it to explode. In ordinary language a mine is a pit or deep excavation in the earth, from which coal, metallic ores, and other mineral substances are taken. The pits from which stones are taken are called *quarries*. See *Mining*.

Mineralogy (min-er-al'o-ji), the science which treats of the properties of mineral substances, and teaches us to characterize, distinguish, and classify them according to their properties. It comprehends the study or science of all inorganic substances in the earth or on its surface. As distinguished from geology, mineralogy deals with the various mineral bodies as separate constituents of the earth's crust, and examines their properties as such, while geology treats them in the aggregate, as building up the crust of the earth, and as forming masses and presenting phenomena that have a history to be investigated. Minerals may be described and classified either in accordance with their chemical composition, their crystallographic forms, or their physical properties of hardness, fracture, color, luster, etc., or a combination of all, and thus various systems of classification have been adopted. Most minerals crystallize in definite forms, and this form is one of the chief characteristics of many mineral species. There are not a few, however, which are not distinctly crystalline, but are earthy or occur in masses; the latter exhibiting important varieties of structure, as *laminated*, *fibrous*, *granular*, *reniform*, *botryoidal*, etc.

Other distinctive characteristics are *color*, which, however, varies even in the same mineral; *luster*, the character of the light reflected from the surface, and described as *adamantine*, *vitreous*, *nacreous*, *greasy*, *silky*, etc.; *fracture*, or the character of the freshly-broken surface; *streak*, or the appearance and color of a furrow made in the mineral by a hard-tempered knife or file; and *hardness*, which is now determined by what is called Mohs' scale. In this scale certain minerals are represented by numbers from 1 to 10, viz. (1) *talc*, common laminated light-green variety; (2) *gypsum*, a crystallized variety; (2.5) *mica;* (3) *calcite*, transparent variety; (4) *fluorspar*, crystalline variety; (5) *apatite*, transparent variety; (5.5) *scapolite*, crystalline variety; (6) *potash felspar*, white cleavable variety; (7) *quartz*, transparent; (8) *topaz*, transparent; (9) *corundum;* (10) *diamond*. To determine the hardness of a mineral, it is ascertained by experiment which of these it will scratch and which will scratch it; thus if a mineral will scratch fluorspar but not apatite, while the latter will scratch it, its hardness is between 4 and 5. Hardness is often one of the most conclusive tests in identifying minerals by their physical properties. Diaphaneity, refraction, polarization, electric properties, etc., are all distinguishing marks. In the classification of minerals, their chemical composition, though not to be regarded by itself, is of much importance. Among famous names in connection with mineralogy may be noted those of Werner, Haüy, Mohs, Dana, etc.

Mineral Tallow, or *Hatchettine*, a substance found in several places in Germany, Siberia, etc. It is soft and flexible, yellowish, resembling wax or tallow, often flaky like spermaceti, and composed of about 86 per cent. carbon and 14 per cent. hydrogen. The mineral is closely related to, if it be not identical with, native paraffine. Like other hydrocarbons, such as naphtha, petroleum, asphalt, etc., it appears to have resulted from the chemical alteration of organic matter.

Mineral Waters, is the term commonly applied to the spring waters that contain an unusual quantity of such substances as sodium, magnesia, iron, carbonic acid and sulphur; but it cannot be used in any absolute fashion. The most popular European springs are those of Aix-la-Chapelle, Wiesbaden, Baden-Baden, Carlsbad, Ahrweiler (Apollinaris), Friedrichshall, Buda-Pesth (Hunyadi-Janos), Vichy and Bath. There are many also in the United States, as at Saratoga, New York, in Arkansas, Virginia, Pennsylvania, and other States. The waters are usually drunk at an early hour before breakfast, and the curative effects are greatly aided by early rising, moderate exercise, mental relaxation, and complete freedom from all kinds of excess. It has not been found practical or useful to classify mineral waters under their chemical elements, but the attempt has been made, as where the springs are described as—salt, earthy, sulphur, iron, alkaline and alkaline-saline. Besides the substances which these terms indicate, the waters are frequently impregnated with carbonic acid gas, which is found to aid digestion while giving a pleasant stimulus to the general system.

Mineral Wool, a substance which is produced from the vitreous liquid slag of a blast furnace drawn out into fine fibers under pressure of steam. The slag, when in a molten condition, is driven by the steam from the furnace through a crescent-shaped aperture, and suddenly cools into long fibrous filaments. The thin, glassy, thread-like substance thus produced is useful as a non-conductor of heat, and it has, therefore, been largely employed as a covering for boilers and steam pipes, to prevent the freezing of water in pipes, etc.

Minersville, a borough in Schuylkill County, Pennsylvania, on the west branch of the Schuylkill River, 4 miles W. of Pottsville. It is in an important anthracite region, coal operations being the chief basis of its prosperity. Pop. 7240.

Minerva (mi-nėr'va), a daughter of Jupiter, and one of the great divinities of the ancient Romans. She was looked upon as the patroness of all arts and trades, and her annual festival, called Quinquatrus, lasted from the 19th to the 23d of March inclusive. This goddess was believed to protect warriors in battle, and to her was ascribed the invention of numbers, and of musical instruments, especially wind-instruments. At Rome a temple was built for Minerva by Tarquin on the Capitol, where she was worshiped along with Jupiter and Juno; and there was also a temple on the Aventine dedicated to herself alone. This deity is supposed to be of Etruscan origin, and her character has much in common with the Greek goddess Athena (which see).

Mingrelia (min-grē'li-a), a district of the Caucasus, in Russia, since 1867 part of the province of Kutais; area, 2100 square miles. The Mingrelians are closely related to the Georgians. The country in this region is mountainous but fertile, and the chief products are corn, wine, oil, etc. Pop. 241,000.

MINE RESCUE WORK

The mine rescue crew is using the canary bird test for poisonous gas. The bird succumbs to gas earlier than a man and thus indicates a dangerous condition of the atmosphere. The canary is revived by oxygen and the crew puts on safety helmets before proceeding.

Minho (mēn′yō), more fully ENTRE DOURO E MINHO, a province of Portugal, bounded on the north by the river Minho, south by the Douro, and west by the Atlantic; area, 2706 square miles. The surface is generally mountainous. The most important products are wine, flax, cork and oranges. Pop. 1.173,106.

Minho, a river of Spain and Portugal, in the northwest angle of the peninsula; length, 130 miles.

Miniature (min′i-tūr), a small painting, especially a portrait, executed with delicate care, chiefly upon ivory, also upon vellum, paper, etc. The term is from the Italian *miniatura*, originally applied to a small painting, such as those formerly used to adorn manuscripts, from the common use of *minium* or vermillion in the ornamentation of the illuminated manuscripts in the middle ages. The art of miniature painting was carried to its highest perfection, chiefly in France, during the eighteenth century,

Minim (min′im), in music, a note equal in duration to one-fourth of a breve, and one-half of a semibreve.

Minim Friars, or MINIMS (from L. *minimus*, least), an order of reformed Franciscans, founded by St. Francis of Paula in Calabria in 1473. Their dress is black, and, like that of the Franciscans, provided with a scourge. They belong to the mendicant orders, and possessed, in the eighteenth century, 450 converts in thirty provinces.

Minimum Thermometer, a self-registering thermometer marking the lowest fall of the mercury. See *Thermometer.*

Mining (mīn′ing), is the term applied to the underground engineering process by which minerals are excavated and brought to the earth's surface. That this process in a rude form was known to the ancients is shown by references in the book of Job, the records of the Phœnicians and Egyptians, and the signs of supposed Roman excavations found in Britain. The first important historical record of mining operations in England is found in the charter to dig for coals, granted in 1259 by Henry III to the freemen of Newcastle-on-Tyne. Then, again, in the reign of Henry VII a commission was empowered to dig and search for metals; while during Elizabeth's reign German miners were induced to visit England, and extensive privileges granted to the 'Society of Mines Royal.'

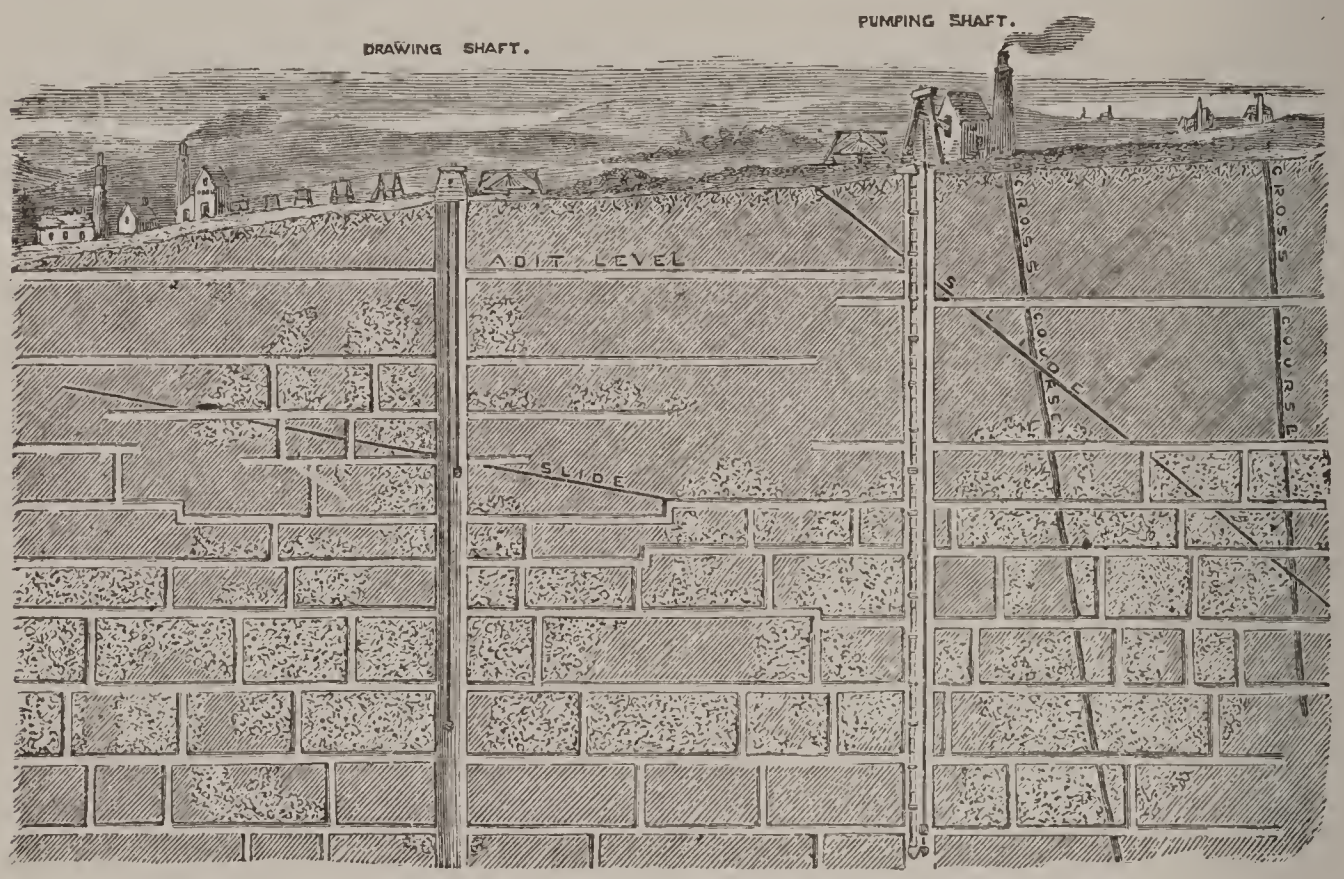
Begun thus early, the development of mining has been greatly advanced by the introduction of gunpowder and dynamite for blasting purposes; by the use of steam engines for pumping water from the mine and bringing material to the surface; and by the aid of improved ventilation, which now enables mines to be carried to deeper levels. In describing the modern methods of mining it is found convenient to draw a distinction between metal and coal.

Metalliferous mining has to deal with a mineral which is found in *lodes* or *veins* irregularly imbedded in rock fissures, the trend of which is uncertain and the thickness variable. In preparing to excavate this irregularly distributed mineral two shafts are sunk in the vicinity of the lodes, one of which is used for pumping and ventilating the mine, the other for drawing the material to the surface. From these two shafts horizontal galleries are driven at distances of 10 or more fathoms apart, an additional gallery being driven at intervals of 10 or 15 fathoms as the mine is increased in depth. The galleries are driven as far as possible on the course of the lode, and if the lode is going down on a slope, the galleries in such case are not vertical above one another. These galleries are connected by vertical passages or 'winzes'; and in this way they are ventilated, and the material to be excavated is divided into rectangular blocks. The metal ore after being excavated is broken up by the miner, put into a barrow, wheeled to one of the main galleries, thence transported in cars drawn on rails by men, mules, or engines, to the main shaft. There it is hoisted to the surface in an iron 'kibble' or a wooden 'skip' which travels up and down in guides fixed to the side of the shaft.

Access to many metalliferous mines is still obtained by means of ladders fixed almost vertically in the sides of the shaft. This toilsome method is averted in some mines by what is called a 'man-engine,' which consists of two rods with platforms attached which move up and down reciprocally the distance between two platforms, the miner ascending or descending from the platform of one rod to that of another alternately. Besides the shafts there is usually an entrance to the mine called an 'adit' or 'day-level' which is driven straight into the mine from the nearest convenient depression or valley and is mainly used for purposes of drainage. Adits are sometimes of great length.

Coal mining has to deal with a mineral which is deposited in *seams* or *beds*, sometimes nearly horizontal, at other times nearly vertical. These seams are interstratified with layers of sandstone, shale, clay, etc., and when the beds are tilted the coal has been frequently found

outcropping at the surface. In the chief coal fields this outcrop coal has been exhausted, and it is now found necessary to approach the coal seams by means of shafts, of a rectangular or circular shape, sunk into the earth. Before sinking the shaft it is expedient to bore down through the strata in order to test the thickness and direction of the coal-measures. The bore-hole is usually begun by digging a small pit about 6 feet deep, and the old method was to pierce the rock by means of a cutting tool attached to long rods and worked by a lever with hand-power. Various improvements on this slow method have recently been made, as where hydraulic or steam power is used to drive the boring-rods, and diamond drills employed instead of the steel tool. (See *Boring.*) When this boring test has been found satisfactory the shaft is then sunk. One shaft not unfrequently intersects a number of workable coal-seams, these being generally separated by shale, sandstone and limestone. Seams of coal vary in thickness from 2 inches up to 30 feet or even much greater. The coal having been reached, the mining engineer has to devise the safest and most economical method of cutting the coal and sending it to the surface. There are two commonly adopted methods of working out coal-seams, viz., the 'pillar-and-stall' or 'stoop-and-room' system, and the 'long-wall' or 'longwork' system. The former method consists in excavating 'rooms' in such a manner as to divide the coal into rectangular pillars or 'stoops.' In the early days of coal-mining the stalls were made large and the upholding pillars left small, no attempt being afterwards made to recover the coal in these pillars. When the floor of the mine was of soft clay or lime the weight of the roof drove the pillars down, causing the floor to rise in the center between the pillars, and establishing an undulating movement throughout the underlying strata called by miners 'the creep.' To prevent this the coal is now left in wide barriers or 'pannels' which divide one part of the workings from another. The pillars of coal which are now left are recovered by a second operation, which consists in cutting them out after a division or pannel has been excavated to its boundary, or by working them out when the stills have been driven the length of two or three pillars. These pillars are, in most cases, about 20 yards square, and in one pannel of the mine there are often 600 such pillars. In the 'longwall' method the miner cuts into, or 'holes' into, the underpart of the coalbed for two or three feet, and then, with the aid of wedges driven in atop, he loosens and extracts the mass of



Section of Part of the Devon Great Consols Copper Mine.
The parts lightly shaded indicate where the mineral has been removed.

MINE SAFETY CREW

MINE RESCUE WORK

Upper view, Bureau of Mines Rescue Crew in safety helmets, ready to enter a gas-filled mine. Lower view, resuscitating a victim overcome by gas by means of the oxygen reviving apparatus.

coal which has been 'holed.' By this system the entire coal-seam is at once extracted, while the empty space or 'goaf' is filled in with waste material as the work advances. Timbers are also largely used to sustain the roof of mined-out chambers and replace coal pillars when removed, and the quantity of timber thus used in the mines of the United States forms one of the large strains on our forest resources, the mine timbers annually used being estimated at about two and a half billion feet.

One of the most important matters connected with coal mining is *ventilation*. To facilitate this there are two openings into the mine, which are technically called the 'intake' and 'return' air-passages. The necessary supply of pure air is maintained either by the natural heat of the mine causing a constant inrush of cold air; by pumps or fans forcing the air down the 'downcast' shaft or drawing it up the 'upcast' shaft; or by furnace ventilation. This latter mode is considered the most efficient. The furnace by its heat causes a constant current up the upcast shaft, thus drawing the vitiated air away from the workings. Connected with ventilation is the dangerous accumulation of fire-damp, which may take place in a mine, to guard against which safety-lamps have been introduced. See *Fire-damp*, *Safety-lamp*.

The pumping of water out of the workings is an essential part of mining, surface water often seeping in, in large quantities. Some of the largest pumping engines raise from 2000 to 3000 gallons of water per minute.

Minion (min'yun), a size of type between brevier and nonpareil. See *Printing*.

Minister (min'is-tėr), a designation in general use in the United States (and less widely in Britain) applied to a preacher or clergyman.

Ministers (min'is-tėrz), the name applied in politics to the chief servants of a state in the administration of its affairs, and the chief representatives of a country at a foreign court. (See *Ministers, Foreign.*) In Britain the former are known collectively as the *ministry*, and the head of the administration is called the *prime minister* or *premier*. The number of ministers who hold cabinet rank varies in different administrations, but it invariably includes the first lord of the treasury, lord chancellor, lord president of the council, the secretaries of state for home, foreign, war, colonial and Indian affairs, the chancellor of the exchequer, and the first lord of the admiralty. (See *Cabinet.*) All the ministers are appointed by the prime minister, subject to the approval of the crown. When an appointment as minister with emoluments is accepted by a member of the House of Commons he must vacate his seat and seek reëlection; but when he merely moves from one ministerial office to another no reëlection is necessary. The ministry, including the officers of the household, number nearly seventy persons, most of whom receive salaries. When the ministry is defeated in the House of Commons on an important question of policy it is customary for the prime minister to tender his resignation to the sovereign, or crave leave to appeal to the country. Should the decision of the House of Commons be endorsed by the country at a general election it is usual for ministers to resign, to admit of another administration being formed before the new Parliament meets. On the resignation of a ministry it is usual for the sovereign to send for the leader of the opposition, who is asked to form a ministry in place of that which has resigned. No such institution exists in the United States, but a responsible premier and ministry exists in various European nations, similar to that of Britain. The American diplomats abroad all formerly bore the title of Minister. but those sent to the leading countries are now known as ambassadors. There is no official in the United States similar to the European premier or prime minister.

Ministers, Foreign, are those accredited representatives which one country sends to another. Generally they are divided into three classes. The highest in rank is the *ambassador extraordinary*, who can claim to represent his state or sovereign in his own person, and receive honors and enjoy privileges accordingly. The *legates* and *nuncios* of the pope also belong to this class. *Envoys extraordinary*, *internuncios*, and *ministers plenipotentiary* belong to the second class, and neither hold the same degree of power nor receive the same distinction as the former. The third class includes *ministers resident*, *envoys* and *chargés d'affaires*, the last being sometimes regarded as a fourth class. Persons who are sent merely to conduct the private affairs of their monarch or his subjects in a foreign place are called *agents* or *residents*; and where they are occupied chiefly with subjects of a commercial character such as reporting trade conditions, they are called *consuls*. When the foreign minister is accredited directly to the sovereign of a state he is considered inviolable, and he is freed

from taxes and territorial restrictions. See *Ambassador, Envoy, Consul.*

Minium (min'i-um), the red oxide of lead, often designated *red lead*, and commonly used as a pigment for ordinary purposes.

Miniver (min'i-vēr), the Siberian squirrel, which has fine white fur; also the fur itself.

Mink, an American and European quadruped, allied to the polecat (*Putorius Vision*). It is semiaquatic, burrowing on the banks of rivers and ponds, living on frogs, crayfishes and fishes.

Minneapolis (min-nē-ap'o-lis), the first city of Minnesota in population and importance, the county seat of Hennepin County, on both sides of the Mississippi, at the Falls of St. Anthony, in close contiguity to St. Paul, the suburbs of the two cities meeting. It is regularly laid out with avenues from 80 to more than 100 feet wide running east and west, having double rows of trees on each side. The public buildings include the courthouse, the University of Minnesota (chartered in 1851), the Augsburg Theological Seminary, Lutheran (opened in 1869); a handsome Free Public Library and Art Gallery. There are numerous fine schools, churches, colleges, banks, opera houses, theaters, etc. The city covers an area of 54 square miles, and is embellished with more than 20 parks, of which Minnehaha Park, about 5 miles south, embraces the famous Minnehaha Falls. There are several fine lakes in the vicinity. With its magnificent water power, this city ranks as one of the leading manufacturing cities of the country. In flour and lumber products it is the foremost city in the world, and it is one of the largest wheat markets in the world, more than 80,000,000 bushels of wheat having been received in the course of a year. The other important industries are the manufacture of engines, boilers, agricultural implements, carriages, wagons, bicycles, machinery, foundries and pork packing. It is a great railroad center, being on the Burlington route; Chicago and Northwestern; Chicago Great Western; Great Northern; Minneapolis, St. Paul and Sault Ste. Marie; North Pacific; St. Paul and Duluth; Wisconsin Central and other railroads. The City and County Building stands a monument of the enterprise of the city; it is a most beautiful structure and was built at a cost of $4,000,000. The Masonic Temple, Public Library, Chamber of Commerce, Guarantee Loan, and other buildings add to the architectural beauties. Pop. 301,408.

Minnesingers (min'e-sing-ėrz; O. Ger. *Minne*, love), a class of German lyric poets of the twelfth and thirteenth centuries, so called from love being the chief theme of their verse.

Minnesota (min-nē-sō'ta), one of the United States of America, bounded north by Canada, east by Lake Superior and Wisconsin, south by Iowa, and west by the Dakotas; area, 84,682 sq. miles. The chief towns are Minneapolis, and the capital, St. Paul. This state occupies the summit of a central plateau formed by the coterminous basins of the Mississippi, the St. Lawrence and Lake Winnipeg. The surface is generally an undulating plain, with a general slope southeast towards the basin of the Mississippi, which, with its affluents, drains about two-thirds of the State. The Red River of the north, which forms part of the west boundary, also receives a part of the drainage, and part is carried by Rainy Lake River to the Lake of the Woods, part to Lake Superior. Lakes are numerous, including Leech Lake, Red Lake, Vermilion Lake, Mille Lacs, and part of Lake of the Woods and Rainy Lake. Iron and copper are among the chief minerals, the iron yield of the Lake Superior region being very large. Peat is seemingly inexhaustible in some parts of the State, and is used to some extent as fuel. Building stones include granite, gneiss, limestone, etc. In this State is the red pipestone deposit, formerly used by the Indians for their pipes. The soil for the most part is good, and the Red River valley is considered the finest wheat-growing district in the State. A large forest known as the 'Big Woods' extends over the center of Minnesota for the length of 100 miles and a breadth of 40 miles, and the country, especially above lat. 46°, is well wooded with pine, spruce, oak, beech, elm, maple, while the prairies have been planted with 20,000,000 trees by the aid of State bounties. The climate is on the whole excellent, the winters, though cold, being clear and dry; and, the temperature being equable, the State has become a winter resort for invalids. The chief industries are agriculture and lumbering. Wheat is very largely grown, and there are extensive crops of oats, corn, potatoes, and other products. Hardy apples are largely cultivated and maple sugar is made in large quantities, and cattle, horses, swine and sheep are largely kept and wool is an important product, while pork packing is a large industry. There are productive fisheries in the lakes. Lumber and flour making are chief among the varied manufactures. Railways extend to about 9000 miles. By the State constitution a por-

NORTHEASTERN PART OF MINNESOTA
Same scale as large map
Arrow R.
Grand Portage
Hovland
Grand Marais
LAKE SUPERIOR
Schroeder
MANITOBA
DOMINION OF CANADA
ONTARIO
Lake of the Woods
Rainy Lake
Rainy River
Lake of the Woods
Red Lake
Lower Red Lake
Upper Red Lake
Battle R.
Big Fork R.
Little Fork R.
Vermilion L.
Sturgeon R.
Pine R.
Kettle R.
Mississippi R.
Crow Wing R.
Leech L.
Mille Lacs
Minnesota R.
Red R. of the North
RED LAKE IND. RES.
DEER CREEK IND. RES.
BOIS FORT IND. RES.
WHITE EARTH IND. RES.
MAHNOMEN IND. RES.
WINNIBIGOSHISH IND. RES.
CHIPPEWA IND. RES.
LEECH LAKE IND. RES.
MILLE LACS IND. RES.
Lake Superior 602 ft. above mean sea level
Two Harbors
Duluth
Superior
Minneapolis
ST. PAUL
MINNESOTA
Scale of Miles
0 10 20 40 60
Size of type indicates relative importance of places.
97° A
96° B
95° C
94° D
93° E
92° F
91° G
49°
48°
47°
46°
45°
44°
1
2
3
4
5
6
A 96° B 95° Longitude C West 94° from D Greenwich 93° E 92° F 91°

tion of land is set apart in each township to provide a perpetual education fund. The State university is at Minneapolis. Minnesota was explored in 1766; became part of the United States in 1783; the Indian title to its lands was extinguished in 1838; its territory was organized by act of Congress in 1849; and in 1858 it was admitted to the Union. Pop. 2,075,708.

Minnesota River, a river in the United States, which flows through Minnesota and falls into the Mississippi 5 miles above St. Paul; length, 470 miles.

Minnow (min'ō; *Leuciscus phoxinus*), a species of fish belonging to the same genus as the carp. They swim in shoals, seldom exceed 3 inches in length, and make excellent bait for trout. In the United States various small fish receive this name.

Mino Bird. See *Grakle.*

Minor (mī'nur), a person of either sex under age, who is under the authority of his parents or guardians, or who is not permitted by law to make contracts and manage his own property. See *Age.*

Minor, in music. See *Major.*

Minorca (mi-nor'ka; Spanish, *Menorca*), an island in the Mediterranean, belonging to Spain, the second largest of the Balearic group; area, 260 sq. miles. It is situated E. N. E. of Majorca, from which it is separated by a strait 27 miles broad. The surface is mountainous, the coast rugged, and the best harbor is at Port Mahon, the capital of the island. Mount El Toro, in the center, attains the height of about 5000 feet. The soil is not generally fertile, yet a considerable quantity of wheat, oil, wine, hemp, flax, oranges, etc., are produced. Iron, copper, lead and marble are plentiful. During the greater part of the eighteenth century Minorca belonged to the British, who finally ceded it to Spain at the Peace of Amiens (1802). Pop. 371,512.

Minorites. See *Franciscans.*

Minor Planets. See *Asteroids* and *Planets.*

Minor Prophets, The, so called from the brevity of their writings, are twelve in number, viz., Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah and Malachi. Their prophecies are found in the Hebrew canon.

Minos (mī'nos), in Greek mythology, a ruler of Crete, said to have been the son of Zeus and Europa, and a brother of Rhadamanthus. During his lifetime he was celebrated as a wise lawgiver and a strict lover of justice, and after his death he was made, with Æacus and Rhadamanthus, one of the judges of the infernal world.

Minot (mī'not), a city, county seat of Ward County, North Dakota, situated on the Mouse River. It is a shipping point for grain and coal. Pop. 6188.

Minotaur (min'u-tạr), in Greek mythology, a monster fabled to have had the body of a man with the head of a bull, and to have fed on human flesh, on which account Minos shut him up in the labyrinth of Dædalus, and at first exposed to him criminals, but afterwards youths and maidens yearly sent from Athens as a tribute. He was slain by Theseus.

Minsk, a town of Russia, capital of government of same name, on the Svislotch, 430 miles southwest of St. Petersburg. It is the see of a Greek archbishop and of a Roman Catholic bishop, and contains two castles. It has some manufactures and a considerable trade. Pop. 91,494.—The government, which has an area of 35,283 sq. miles, has extensive forests and great stretches of marsh or swamp. Pop. (1906) 2,581,400.

Minster (min'stėr), anciently the church of a monastery or convent, afterwards a cathedral, as York Minster.

Minstrel (min'strel), a singer and musical performer on instruments. In the middle ages minstrels were a class of men who subsisted by the arts of poetry and music, and sang to the harp or other instrument verses composed by themselves or others. The person of the minstrel was sacred; he was 'high placed in hall, a welcome guest.' So long as the spirit of chivalry existed the minstrels were protected and caressed, but they afterwards sank to so low a level as to be classed, in the reign of Queen Elizabeth, with beggars and vagabonds.

Mint, the name given to several herbaceous aromatic plants of the genus *Mentha*, nat. order Labiatæ. They are nearly all perennial, having square stems which bear opposite and simple leaves; they are widely distributed throughout temperate regions; and they abound in resinous dots which contain an essential oil. Mint has an agreeable odor, and partakes in the highest degree of tonic and stimulating properties. Spearmint (*M. viridis*) is generally used, mixed with vinegar and sugar, in sauce. Peppermint (*M. piperita*) yields the well-known stim-

ulating oil of the same name. Pennyroyal (*M. Pulegium*) is used for the same purposes as peppermint.

Mint, the place where a country's coinage is made and issued under special regulations and with public authority. In England there was formerly a mint in almost every county; the sovereign, barons, bishops, and principal monasteries exercised the right of coining; and it was not till the reign of William III that all the provincial mints were abolished. The present mint on Tower Hill, in London, was erected between the years 1810 and 1815. In former times the coinage was made by contract at a fixed price. The English mint supplies the whole of the coinage of the British Empire, except Australia and the East Indies, which are supplied from branch mints at Sydney, Melbourne, Calcutta and Bombay. In the United States the original mint was established at Philadelphia, and this is still the principal mint, there being others at Denver, San Francisco and New Orleans. See *Coining*.

Minuet (min'ū-et), a slow, graceful dance said to have been invented in Poitou, in France, about the middle of the seventeenth century, performed in ¾ or ⅜ time. The term is also applied to a tune or air to regulate the movements in the dance, or composed in the same time.

Minus (mī'nus), in algebra, the term applied to the negative or subtractive sign —, which, when placed between two quantities, signifies that the latter is to be taken from the former: thus $a - b$ (called *a minus b*) signifies that b is to be subtracted from a. Quantities which have the sign *minus* before them are called negative of *minus* quantities; as, $-xy$, $-5cd$.

Minute (min'it), a division of time and of angular measure. As a division of time it is the sixtieth part of an hour. As a division of angular measure it is the sixtieth part of a degree. In astronomical works minutes of time are denoted by the initial letter *m*, and minutes of a degree or of angular space, by an acute accent (′).

Minute Men, in the American Revolutionary war, the militia of New England, who were expected to be ready for service at a minute's notice.

Miocene (mī'ō-sēn; Gr. *meiōn*, less, *kainos*, recent), in geology, the name given by Sir Charles Lyell to a subdivision of the tertiary strata, lying between the Eocene and Pliocene. The terms *Miocene* and *Pliocene* are comparative, the first meaning less recent and the other more recent. The Miocene strata contain fossil plants and shells which indicate warm climate. The mammals are important, and foreshadow the animal life of the present day.

Miösen (my*eu'*sen), the largest lake in Norway, about 40 miles N. E. of Christiania. It is 62 miles long and about 9½ miles in greatest breadth, and its waters are carried by the Vormen to the Glommen.

Miquelon (mik-lōn), an island in the Atlantic Ocean, near the southern coast of Newfoundland, belonging to France. The southern part, called Little Miquelon, was once a separate island, but since 1783 has been connected with it by the elevation of a sandbar. The island has been in the possession of the French since 1763. See *Pierre, St.*

Mir, the Russian commune, consisting of the inhabitants of one or more villages, who are as a community owners of the surrounding land, and redistribute the same to the members from time to time.

Mirabeau (mē-rȧ-bō), Gabriel Honoré Riquetti, Comte de, a French statesman, son of Victor Riquetti, marquis de Mirabeau, born in 1749 at Bignon, near Nemours; died at Paris, in 1791. At an early age he manifested extraordinary intelligence; but his youth was a stormy and licentious one, so much so that on several occasions he was imprisoned by his father

Mirabeau.

under a *lettre de cachet*. It was during an imprisonment at Vincennes, which lasted three years and a half, that he wrote his *Lettres à Sophie, Lettres de*

Cachet and *L'Espion Dévalisé*. On his release from this prison he lived for some time in Holland and England, returning to France in 1785. On the assembling of the states-general in 1789 Mirabeau, elected for Aix, soon became prominent. When the king required the *tiers état* to vote apart from the other two orders it was Mirabeau who counseled resistance, demanded the withdrawal of the troops, consolidated the National Assembly, and defied the king's orders. For some months he continued to lead, but he soon found that the members of the assembly were mostly impracticable and inexperienced men, whose chief function was to discuss an ideal constitution. As a practical statesman Mirabeau desired action, and for this reason he attempted to form alliances with Lafayette, the Duke of Orleans, Necker, and finally with the queen. Correspondence with the latter was maintained through La Marck, and he received a subsidy from the royal party. No practical result followed from this secret alliance, for the queen rejected Mirabeau's counsel and suspected his methods of government. Whether he might ultimately have been able to guide the revolution into peaceful ways has always been a matter of conjecture to historians, but this possibility was prevented by his death in 1791. This was regarded as almost a national calamity, and the people buried him with splendid pomp in the Pantheon.

Mirabilis (mi-rab'i-lis), a genus of plants, nat. order Nyctagineæ, one species of which, *M. jalāpa*, is well known in gardens as 'the marvel of Peru.' It is a native of South America.

Miracle (mir'a-kl; Latin, *miraculum*, a wonder, a prodigy; in the original Greek *sēmeion*, a sign, *teras*, a wonder or prodigy), a suspension of, or deviation from, the known laws of nature, brought about by the direct interference of a supreme supernatural being. It is in its nature, as the term implies, an occurrence which is strange, marvelous, inexplicable, and is usually connected with some ulterior moral purpose. By the elder theologians a miracle was conceived to be the triumph of the Divine Will over the work of His hands and the laws of His making. In modern exegesis, however, the miraculous element is not considered to give evidence of opposing forces. On the contrary, a miracle is explained as a manifestation of the Divine Power working through laws and by methods unknown to us, and which, upon a higher plane, are altogether natural and orderly.

Miracle Plays, a sort of dramatic entertainments common in the middle ages, in which the subjects were taken from the lives of saints and the miracles they wrought. They were originally performed in church, but latterly outside, in market-places and elsewhere. In England they were first produced in the twelfth century. They differed from the mysteries mainly in subject. See *Mysteries*.

Mirage (mi-räzh'), an optical illusion, occasioned by the refraction of light through contiguous masses of air of different density; such refraction not unfrequently producing the same sensible effect as direct reflection. It consists in an apparent elevation or approximation of coasts, mountains, ships, and other objects, accompanied by inverted images. In deserts where the surface is perfectly level a plain thus assumes the appearance of a lake, reflecting the shadows of objects within and around it. The mirage is commonly vertical, that is, presenting an appearance of one object over another, like a ship above its shadow in the water. Sometimes, however, the images are horizontal. *Looming* is a phenomenon of the same nature, in which the objects appear to be lifted above their true positions, so that an observer sees objects which are beyond the horizon. The cause is in both cases the same, for while the mirage is produced in most instances by refraction from the desert sand, looming is occasioned by reflection from the sky. The phenomenon called Fata Morgana, which is sometimes seen on the Calabrian coast, is a kind of mirage. By it men and animals apparently of immense size may sometimes be seen presented in the air.

Miramichi (mi-ra-mi-shē'), a bay and river of New Brunswick, Canada. The bay is 20 miles wide at its entrance and runs 21 miles inland. The river falls into the bay after a N. E. course of about 90 miles, of which 40 are navigable for large vessels.

Mirandola (mi-rän'do-lä), Giovanni Pico della, surnamed the *Phœnix*, born in 1463; died in 1494, was the youngest son of Gianfrancesco della Mirandola, of the princely family of Mirandola. He studied at Bologna and at different towns of Italy and France. He had few equals as a finished scholar.

Miribel (mir-i-bel), Marie François Joseph de, soldier, was born at Montbonnet, Department of the Isere, France, in 1831. He was at the siege of Sebastopol, and in the Italian campaign in 1850; served under Bazaine in Mexico, and during the siege of Paris by the

Germans was conspicuous for his gallantry. In 1890 he was made chief of the General Staff of the Army. By the French he was regarded their greatest living strategist. The efficiency attained by their army in recent years is attributed to his masterly direction. He died in 1893.

Mirror (mir'ur), a smooth surface capable of regularly reflecting a great proportion of the rays of light that fall upon it. The mirrors used by the ancients, and more especially by the Etruscans, were made of thin polished bronze, either set in a case or fitted with a handle. Small metal mirrors were also used by the Greeks and Romans, and specimens brought by the latter have been found in Cornwall. In England during the middle ages the gentlewomen carried small circular polished metal mirrors attached to their girdles. These were sometimes also fitted into cases with a lid, the material of which was of gold, silver, or ivory, richly designed and ornamented. The making of glass mirrors, which had their backs silvered with an amalgam of mercury and tin, was early practiced by the Venetians, and by strict prohibitive statutes they were long able to keep their workmen in Venice and enjoy a monopoly of the trade. The manufacture of mirrors of this kind was first introduced into England early in the seventeenth century. The older method of silverizing mirrors by the amalgam of mercury and tin occupied usually a period of weeks, and it has been generally given up. In 1835 Liebig observed that by heating aldehyde in a glass vessel along with an ammoniacal solution of nitrate of silver a coating of brilliant metallic silver was left upon the glass. This has now been made use of in mirror making by what are known as the hot and cold processes. In the hot process the glass is first sensitized with a solution of tin, which is then rinsed off and the plate laid upon a flat, double-bottomed metal table heated by steam to about 100° Fahr. In this position a solution of nitrate of silver, ammonia and tartaric acid in distilled water is poured over it; and if the temperature is kept uniform a thick deposit of silver will be formed in about half an hour. When the silver layer is carefully wiped this process is repeated. In the cold process a solution of nitrate of silver, nitrate of ammonia, and caustic soda dissolved in water is mixed with a solution of loaf-sugar, vinegar and water. This is poured quickly and evenly over the glass plate, and the silver is precipitated in a few minutes, after which it is washed and the process repeated. The silvering is then protected by a coating of shellac or copal varnish. More recently a solution of bichloride of platinum is applied to the surface of the glass and precipitated with oil of lavender in the manufacture of the cheapest mirrors. Mirrors may be plane or spherical, and in the latter case they may be either convex or concave. The optical principles involved in reflection from mirrors are simple.

Mirzapur (mēr-zä'pör), a city of India, capital of a district of same name, in the N. W. provinces, on the Ganges, 56 miles below Allahabad and 45 above Benares, was formerly a place of great trading importance. Pop. 79,862.

Misdemeanor (mis-de-mē'nur), a term applied to all crimes and offenses, whether of omission or commission, less than felony. Misdemeanors are of two kinds—either those which exist at common law, *mala in se*, or those created by statute.

Miserere (mīz-e-rē're; Latin, 'have mercy'), the name of a psalm in the Roman Catholic Church service, taken from the fifty-first Psalm, beginning in the Vulgate, '*Miserere* mei, Domine' ('Pity me, O Lord'). The name is also applied to a projecting bracket on the under side of a hinged seat in a stall of a church; or to the seat and bracket together. The seat being turned up while a person stands.

Mishawaka (mish-a-wą'kȧ), a city of St. Joseph Co., Indiana, on the St. Joseph River, 4 miles E. of South Bend. Its manufactures include flour, gas engines, furniture, plows, windmills, pulp, etc. Pop. 11,886.

Mishna (mish'na), a collection or digest of Jewish traditions and explanations of Scripture, preserved by tradition among the doctors of the synagogue, till Rabbi Jehudah, surnamed the *holy*, reduced it to writing about the end of the second century A.D. The Mishna is divided into six parts: the first relates to agriculture; the second regulates the manner of observing festivals; the third treats of women and matrimonial cases; the fourth of losses in trade, etc.; the fifth is on oblations, sacrifices, etc.; and the sixth treats of the several sorts of purification. See *Talmud*.

Misiones (mē-si-ō'nās), a fertile territory of the Argentine Republic, between the Uruguay and Paraná; area, 11,282 square miles. Pop. (1904) 38,775.

Miskolcz (mish'kolts), a town in Hungary, 113 miles northeast of Budapest. The inhabitants are

chiefly employed in agriculture. Pop. 43,096.

Misletoe. See *Mistletoe.*

Mispickel (mis'pik-el), arsenical pyrites, an ore of arsenic, containing this metal in combination with iron, sometimes found in cubic crystals, but more often without any regular form.

Misprision (m i s-p r i'zhun), in law, any high offense under the degree of capital, but nearly bordering thereon. Misprision is contained in every treason and felony. *Misprision of felony* is the mere concealment of felony. *Misprision of treason* consists in a bare knowledge and concealment of treason, without assenting to it. Maladministration in offices of high public trust is a *positive misprision.*

Missal (mĭs'al), in the Roman Catholic liturgy, the book which contains the prayers and ceremonies of the mass. (See *Mass.*) The greater part of these prayers and ceremonies are very ancient, and some of them have come down from the times of the Popes Gelasius I (end of fifth century) and Gregory the Great (end of sixth century); some are even older. The Missal was revised by the Council of Trent, its adoption by the whole Catholic Church demanded by Pius V in 1570, and in this form it is still retained. In England before the Reformation there were missals of the Sarum use, Lincoln use, Bangor use, etc. Before the invention of printing the writing of missals ornamented with illuminated ornaments, initials, miniatures, etc., was a branch of art raised to high excellence in the monasteries.

Missel-thrush. See *Thrush.*

Missing Link, the link between man and the lower animals much sought for, but not yet found. The nearest approach to it lies in the discovery of certain skeletal remains which appear to occupy a place between man and the higher apes. The most significant of these are some fossil bones found by Dr. Dubois in Java in 1891 and named by him *Pithicanthropus.* They consist of a cranium and some other bones, and seem to stand midway between man and the anthropoid apes. While probably human, some doubts of their true position are entertained.

Missions, MISSIONARIES. The first Christian missionaries were the apostles, and by them and their successors Christianity was in the course of a few centuries spread over all parts of the Roman Empire. In some parts, as in Britain, it gave way again before the Germanic invaders of the fifth and sixth centuries, and some of the most noted missionaries were those who reintroduced their faith among the German tribes. St. Augustine or Austin, who was sent by Gregory the Great with forty associates to preach the gospel among the Saxons of Britain at the end of the sixth century, was the first of this missionary group. Britain in its turn sent forth missionaries, such as St. Boniface, 'the apostle of Germany.' Germany also sent out the missionaries who converted D e n m a r k, Sweden and Norway, Poland, Hungary and Bohemia. The Crusades opened up new spheres for missionary efforts in the East, and two religious orders founded at the beginning of the thirteenth century, the Dominicans and Franciscans, devoted themselves to preaching among the Mussulmans. Others advanced as far as Tartary, Tibet and China, but the persecutions there became so violent that those countries had to be abandoned. A new impulse was given to missions by the discovery of the New World. When the way had been prepared by the Spanish and Portuguese armies a crowd of friars of all orders set out for the West Indies, Mexico, Peru and Brazil, to spread Catholicism; but very few, like Las Casas, protected the natives from rapacity or preached Christianity by their conduct. The powerful order of the Jesuits, which was founded in the sixteenth century, turned their attention to the East, and the celebrated Francis Xavier, a member of the order, proceeded to India, where his efforts were crowned with success. From India Christianity was introduced into Japan, where it had to contend against terrible persecutions, before which the missionaries were compelled to retire. Father Ricci, another Jesuit, penetrated to Peking, and succeeded about the end of the sixteenth century in gaining a firm footing. At the beginning of the seventeenth century some Dominican missionaries made Tonquin and Cochin China the center of their efforts, and pushed out thence into all the neighboring countries with considerable success. In 1622 Gregory XV gave a better organization to the Roman Catholic missions by the foundation of the Propaganda, and they are now very widely spread and carried on with much energy.

The earliest Protestant foreign mission appears to have been one which was established in Brazil in 1555. Gustavus Vasa, King of Sweden from 1523 to 1560, towards the close of his reign sent forth a mission to convert the Laplanders. Shortly after the settlement of New England in 1620 John Eliot took a deep in-

terest in the condition of the North American Indians, and in 1646 began a regular mission among that people. But these were only isolated trivial efforts, and it was not until the eighteenth century that the true missionary spirit awoke. The English took the lead in this movement, but were speedily followed by Danes and Germans, especially the Moravian Brethren. In England in 1701 an association was formed for mission purposes, called the Society for the Propagation of the Gospel in Foreign Parts, in connection with the Church of England. John Wesley labored from 1735 to 1737 as a missionary of this body in Georgia. Its operations are chiefly devoted to the British colonies. The first mission of the Wesleyan Methodists was sent out in 1786 to the West Indies. They have now stations in India, Ceylon, China, Africa, etc. The Baptist Missionary Society, the operations of which have been crowned with remarkable success, was founded in 1792, in consequence of the exhortations of William Carey, who himself went as missionary to India. The two most distinguished missionaries belonging to this society besides Carey were Marshman and Ward. The society afterwards founded stations in China and Japan, Palestine, the West Indies, Equatorial Africa, and in some European states. The London Missionary Society was founded in 1795 by evangelical Christians of different denominations. Tahiti was the island which received the first band of missionaries (March, 1797). China and the East Indies, Madagascar, South and Central Africa, the West Indies, etc., followed. The most celebrated missionary to the Pacific was John Williams, and Moffat and Livingstone did good work in the African field. The Scottish Missionary Society was organized at Edinburgh in 1796. Its first mission station was fixed among the Tartars, near the Black and Caspian Seas; but its operations have not been very extensive. The (English) Church Missionary Society was established by members of the Church of England in 1799, and it is one of the chief missionary societies, having missions in Africa, India, Ceylon, China, Japan, Egypt, Arabia, Persia, Palestine, North America, etc. The Established Church of Scotland and the Free and United Presbyterian churches have been active in missionary efforts. After the missions of Great Britain the next in importance are those of the United States, the first missionary society of which country was founded in 1810 under the title of the American Board of Commissioners for Foreign Missions. The American Baptist Missionary Union was founded in 1814, the Methodist Episcopal Church Missionary Society in 1819, the Protestant Episcopal Missionary Society in 1820, the Presbyterian Board of Foreign Missions in 1833. The American missionaries have naturally done much in the conversion of the Indians of their continent, but their missions are widely spread elsewhere.

Mississippi (m i s - i s - s ip'pi; 'Great W a t e r'), the principal river of North America, and one of the largest rivers in the world. It has its source in Lake Itasca, State of Minnesota, whence it issues about 12 feet wide and 2 feet deep; from thence it trends southward through a number of lakes and over a series of rapids until the Falls of St. Anthony are reached; below this it receives the Iowa, the Illinois and the Missouri as tributaries, but the latter is really the main stream, having a length of 2908 miles before the rivers unite, while that of the Mississippi is only 1330 miles. From St. Louis, a little below their confluence, the Mississippi becomes a broad, rapid, muddy river, liable to overflow its banks; lower down it receives in succession the Ohio, Arkansas and Red rivers, and it finally enters the Gulf of Mexico through a large delta with several 'passes,' some distance below New Orleans. The combined lengths of the Missouri and Mississippi are about 4200 miles; the whole area drained by the Mississippi is 1,246,000 sq. miles; the maximum flood volume reaches 1,400,000 cubic feet per second below the Ohio; and the sediment transported to the gulf annually would make a solid block 1 mile square and 26 feet high. Above its junction with the Ohio at Cairo the river enters upon a large alluvial basin, bounded on both sides by high bluffs, and through this plain the river winds for about 1150 miles. The volume is usually smallest in October and greatest in April, and the low-lying lands are subject to terrible floodings during the spring freshets. At many places attempts have been made to secure the river within its banks and save the country from loss and suffering by building dykes, or *levees* as they are called. The sediment carried down, however, is continually raising the bed of the river, and thus breaks are frequently made in these levees. A recent method of improving the river's course, sanctioned by Congress and superintended by Captain Eads, is to construct light willow screens or dams on the shoals and at the wide places on the river where bars already exist. By this a deposit is formed which in time will act as a bank to hem

MISSISSIPPI
Scale of Miles
0 5 10 20 30 40 50
Longitude West from Greenwich
92° 91° 90° 89° 88°
A B C D
35° 34° 33° 32° 31°
1 2 3 4 5
TENNESSEE
ARKANSAS
LOUISIANA
ALABAMA
Memphis
Forrest City
Brinkley
Devall Bluff
Stuttgart
Pine City
Pin Bluff
Arkansas City
Monticello
Lake Village
Greenville
Winterville
Greenwood
Leland
Indianola
Sunflower
Moorhead
Dunleith
Itta Bena
Carrollton
Winona
Duncan
Gunnison
Shelby
Rosedale
Mound Bayou
Cleveland
Boyle
Rule
Lobdell
Benoit
Shaw
Steiner
Sunnyside
Minter City
Drew
Rome
Sumner
Hardy Sta
Glendora
Cascilla
Tutwiler
Dublin
Duncan
Marks
Lyon
Belen
Jonestown
Friar Point
Dickerson
Beverly
Cloverhill
Hillhouse
Marlson
Vance
Teasdale
Clarksdale
Tallahatchie R.
Sledge
Crenshaw
Delta
Austin
Dubbs
Senatobia
Maud
Eula
Longview
Como
Abbeyville
Sardis
Burgess
Batesville
Orwood
Courtland
Pope
Water Valley
Froston
Oakland
Tillatoba
Banner
Bowles
Coffeeville
Freedom
Pittsboro
Houston
Bigcreek
Grenada
Slate Sprs.
Cadarette
Duckhill
Sidney
Whaley
Northcarrollton
Eupora
Tomnolen
Winona
Kilmichael
Coila
Vaiden
Crowsville
Chester
Sturgis
French Camp
Carmack
Weir
Hesterville
Ethel
Durant
Sallis
Kosciusko
Ackerman
McCool
Webster
Kerr
Louisville
Starkville
Sessums
Artesia
Columbus
Aberdeen
Oxford
Taylor
Toccopola
Tula
Pontotoc
Randolph
Sarepta
Oxford
Esperanza
Tupelo
Verona
Plantersville
Nettleton
Shannon
Houlka
Bigbee
Amory
Splunge
Gibson
Buenavista
Una
Montpelier
Atlanta
Hohenlinden
Cumberland
Abbott
Pheba
West Point
Steens
Muldon
Caledonia
Mathiston
Maben
Osborn
Cedarbluff
Mathew
Benoak
Crawford
Brooksville
Joplin
Cliftonville
Macon
Mashulaville
Fearns Sprs.
Shuqualak
Preston
Binnsville
Kellis Store
Scooba
Dekalb
Sucarnoochee
Hand
Porterville
Carmichael
Goodwater
Shubuta
Chaparral
Diamond
Woodlawn
Laurel
Waynesboro
Ellisville Jc.
Chicora
Bucatunna
Stateline
Richton
Avera
Adamsville
Jonathan
Leakesville
Calvert
Edith
Ball
Merrill
Lucedale
Donavan
Latonia
Crossroads
Basin
Hurley
Mobile
Three Rivers
Larue
Florala
Mosspoint
Eastside
Scranton
Gautier
Pascagoula
Mobile Bay
Sound
Tombigbee R.
Meridian
Hickory
Garlandville
Enterprise
Energy
Increase
Stonewall
Quitman
Verba
Pachuta
Paulding
Boykins
Montrose
Lake
Lawrence
Pulaski
Morton
Forest
Conehatta
Decatur
Marion
Toomsuba
Newton
Hattiesburg
Moselle
Morriston
Mamouth Sprs.
Lott
Advance
Dale
Oloh
Clyde
Columbia
Richburg
McLaurin
Rawlton
Purvis
Epps
Skinner
McLain
Leaf
Brooklyn
Bassfield
Baxterville
Lumberton
Hillsdale
Maxie
Barbara
Wiggins
Orvisburg
Poplarville
Wheat
Recluse
Inda
Mentorum
Derby
Chinquepin
Carriere
Ladner
McHenry
Daisy
Airey
Howison
Bonnie
Hariel
Wortham
Pickayune
Nugent
Handsboro
Ocean Sprs.
Biloxi
Gulfport
Mississippi City
Kiln
Gainesville
Pearl River
Bay St. Louis
Pass Christian
Waveland
Pearlington
Lake Pontchartrain
L. Maurepas
Covington
Franklinton
Bogalusa
Pearl R.
Yazoo City
Yazoo R.
Black R.
Big Black R.
Vicksburg
Yokena
Adams Sta.
Utica
Rocky Sprs
Willows
Grand Gulf
Port Gibson
Westside
Martin
Hermanville
Rodney
Redlick
Church Hill
Anna
Selma
Harriston
Union Church
Fayette
McNair
Hamburg
Roxie
Meadville
Cobbs
Little Sprs
Whiteapple
Knoxville
Tibley
Natchez
Washington
Black River
Pine Ridge
Homochitto R.
Norfield
Summit
Trent
Zionhill
Fernwood
Eastfork
Gloster
Liberty
Bates Mill
Ariel
Chatawa
Osyka
Woodville
Wilkinson
Arlomsh
Perrytown
Coles
Do Droso
Fort Adams
Ashwood Sta.
Centerville
Olio
Hurst
Crystal Sprs.
Gallman
Hazlehurst
Beauregard
Wesson
Montgomery
Brookhaven
Monticello
Bogue
Newit
Chitto
Roxie
Ruth
Lenoir
Trim
McComb
Melis
Holmesville
Magnolia
Walkers Bridge
Buncombe
Ryals
Dexter
Pittman
Roxville
Jackson
Pelahatchee
Brandon
Florence
Daniel
Trenton
Cato
Terry
Braxton
Harrisville
Weathersby
Magee
Westville
Venus
Shivers
Mt. Olive
Collins
Fuller
Soso
Sandersville
Ellisville
Williamsburg
Seminary
Prentiss
Carson
Estabutchi
Mendenhall
Raleigh
Bayspring
Taylorsville
Ford
Stringer
Heidelberg
Vosburg
Carter
Hunter
Peyton
Redlick
Buruell
Barlow
Ashley
Music
Shivers
New Hebron
Mish
Silvercreek
Katie
Williamsburg
Seminary
Prentiss
Carson
Estabutchi
Moselle
Morriston
Mamouth Sprs.
Lott
Advance
Dale
Oloh
Clyde
Columbia
Richburg
McLaurin
Rawlton
Purvis
Epps
Skinner
McLain
Leaf
Brooklyn
Bassfield
Baxterville
Lumberton
Hillsdale
Maxie
Barbara
Wiggins
Orvisburg
Poplarville
Wheat
Recluse
Inda
Mentorum
Derby
Chinquepin
Carriere
Ladner
McHenry
Daisy
Airey
Howison
Bonnie
Hariel
Wortham
Pickayune
Nugent
Handsboro
Ocean Sprs.
Biloxi
Gulfport
Mississippi City
Kiln
Gainesville
Pearl River
Bay St. Louis
Pass Christian
Waveland
Pearlington
Lake Pontchartrain
L. Maurepas
Covington
Franklinton
Bogalusa
Pearl R.
Yazoo City
Yazoo R.
Black R.
Big Black R.
Vicksburg
Yokena
Adams Sta.
Utica
Rocky Sprs
Willows
Grand Gulf
Port Gibson
Westside
Martin
Hermanville
Rodney
Redlick
Church Hill
Anna
Selma
Harriston
Union Church
Fayette
McNair
Hamburg
Roxie
Meadville
Cobbs
Little Sprs
Whiteapple
Knoxville
Tibley
Natchez
Washington
Black River
Pine Ridge
Homochitto R.
Norfield
Summit
Trent
Zionhill
Fernwood
Eastfork
Gloster
Liberty
Bates Mill
Ariel
Chatawa
Osyka
Woodville
Wilkinson
Arlomsh
Perrytown
Coles
Do Droso
Fort Adams
Ashwood Sta.
Centerville
Olio
Hurst
Crystal Sprs.
Gallman
Hazlehurst
Beauregard
Wesson
Montgomery
Brookhaven
Monticello
Bogue
Newit
Chitto
Roxie
Ruth
Lenoir
Trim
McComb
Melis
Holmesville
Magnolia
Walkers Bridge
Buncombe
Ryals
Dexter
Pittman
Roxville
Jackson
Pelahatchee
Brandon
Florence
Daniel
Trenton
Cato
Terry
Braxton
Harrisville
Weathersby
Magee
Westville
Venus
Shivers
Mt. Olive
Collins
Fuller
Soso
Sandersville
Ellisville

in the river, while the increased volume thus obtained will help to scour out a deeper channel. Excellent work was done in this way by Captain Eads on the lower channel of the river. At Keokuk, Iowa, in 1913, the greatest power dam in the world will be completed. See *Water Power.*

Mississippi, one of the Southern United States; bounded north by Tennessee, east by Alabama, south by the Gulf of Mexico and Louisiana, and west by Louisiana and Arkansas; area, 46,865 sq. miles. The Mississippi winds along its western frontiers for 530 miles. Near the Gulf of Mexico the country is low and swampy, the central part is hilly and mostly prairie-land, a large part of the northeast is covered with forests, while 7000 sq. miles along the Mississippi consist of rich bottom-lands. This river receives the far larger part of the drainage. In the north the climate is tolerably mild and agreeable; but in the south, below lat. 13°, and along the swampy basin of the Mississippi, it is both extremely hot and unhealthy. In the southeast, where the pine forests extend widely, the soil is light and comparatively barren, but large tracts of it are well adapted for pasture. In the northwest, on the borders of the Yazoo, the soil is composed of rich black mould; and in the Mississippi bottom-lands, where it is protected from inundation by embankments or levees, it is of remarkable fertility. The staple of the State is cotton, in which it is surpassed only by Texas and Georgia. Of food plants corn ranks high. The other crops are chiefly sweet potatoes, hay and tobacco; while fruit is abundant. Grazing is of some importance and there is a considerable wool-clip and much pork product. Minerals are lacking, lignite and fertilizers being the principal. The most extensive manufacturing interest is the cutting and sawing of lumber, while the production of cottonseed-oil, oil-cake and naval stores is of some importance. The export trade, carried on through New Orleans and Mobile, is chiefly in lumber and cotton, while the river and coasting traffic is large. The railroads extend to about 4500 miles. The State supports a public school system with separate schools for the white and colored races, besides a State university and other schools of high grade. The capital is Jackson. The principal towns are Vicksburg, Meridian and Natchez. Other important towns are Jackson, Corinth, Enterprise, Columbus and Carrollton. The first permanent settlement of Mississippi was made by some Frenchmen in 1716 at Natchez, then called Fort Rosalie. It was admitted into the Union in 1817. It has a large colored population. Pop. 1,797,114.

Mississippi Scheme, a bubble scheme projected by John Law at Paris in 1717. Part of the scheme was for the colonization and development of the Mississippi valley, but combined with this there was a banking scheme and a scheme for the management of the national debt, the whole being supported by the French government. Such were the hopes raised by this undertaking that the shares originally issued at 500 livres (say $100) were sold at ten, twenty, thirty and even forty times their value. People came from all parts of France, and even from foreign countries, in order to invest in the company, and there was a general mania of speculation. The government took advantage of the popular frenzy to issue increased quantities of paper money, which was readily accepted by the public creditors and invested in shares of Law's company. This went on till the value of the paper money became depreciated in value and the shares fell in price. All attempts to check the downward course failed, and when Law, the originator of the bankrupt company, fled from France in 1720 the state acknowledged itself debtor to the shareholders to the extent of 1,700,000,000 livres, or $340,000,000. See *Law, John.*

Missolonghi (mis-o-lon′gē), a town in Greece, capital of the monarchy of Acarnania and Ætolia, near the Gulf of Patras, 22 miles west of Lepanto. It is notable for its gallant resistance in 1821 and in 1825-26 to a large Turkish army. Lord Byron died here in 1824, and there is here a cenotaph which has been erected to his memory. Pop. 8394.

Missoula (miz-zö′la), a city, capital of Missoula Co., Montana, on a river of the same name, 96 miles W. N. W. of Helena. It is in a mining and farming region, and is the seat of the University of Montana. Pop. 12,869.

Missouri (miz-zö′rē), a river of North America, which is formed in the Rocky Mountains, in Montana, winds circuitously along the base of the mountains, then east till it reaches the western boundary of North Dakota, and receives the Yellowstone. Here it begins to flow southeastwards through North and South Dakota, then forms the eastern boundary of Nebraska, separating it from Iowa and Missouri; separates for a short distance Kansas from Missouri, then strikes eastwards across the latter State, and joins the Mississippi after a course of 2908 miles. It is navigable 2500 miles from the Mississippi. Its affluents are very

numerous on both banks, but by far the most important of them are the Yellowstone, the Nebraska or Platte and the Kansas, all from the west.

Missouri (miz-zö′rē), one of the United States of America, bounded north by Iowa; east by the Mississippi, which separates it chiefly from Illinois, but partly also from Kentucky and Tennessee; south by Arkansas; and west by Kansas and Nebraska, from which it is partly separated by the Missouri and by the Indian Territory; area, 69,420 sq. miles. The surface is traversed by numerous hills and swelling ridges, but the southeast corner is almost an alluvial flat. The most important rivers are the Mississippi and the Missouri, the latter of which crosses the State from west to east, and has several navigable tributaries—the Lamine, Osage, Gasconade, Grand and Charlton. The State is rich in minerals, especially in iron, which occurs in mountain-like masses, known as Pilot Knob, Iron Mountain, and by other names. Lead is an abundant product, and there is a good yield of zinc, nickel, copper and cadmium. The coal yield is over 4,000,000 tons. Much of the soil is fertile, and there is a great deal of valuable timber. Missouri ranks high among the corn-growing States, and yields good crops of oats and wheat. Sorghum and castor-oil beans are largely cultivated, and flax, hemp, cotton and tobacco are of some importance. Of live stock, sheep and swine rank highest. The chief industries, which include flour-milling, iron-working and pork-packing, have their main seat at St. Louis. The tobacco industry ranks second in importance in the state, distilleries and breweries yield largely, much oleomargarine is made, and there are numerous other industries of some importance. The numerous navigable streams afford unwonted facilities for traffic, and there are about 8000 miles of railways open in the State. The climate is generally healthy, but subject to extremes. Education has been well provided for both by the State and by the different religious bodies. Besides the State university there are other universities and colleges (medical and other), normal schools, school of agriculture, school of mining and metallurgy, etc. Jefferson City is the capital, but St. Louis is the commercial metropolis and largest city, and there are many others more populous than Jefferson. Missouri formed at one time part of Louisiana. It was admitted into the Union in 1821. Pop. 3,293,335.

Missouri Compromise, an act of the American Congress, passed in 1820, by which Missouri was admitted into the Union as a slave-holding State, but which enacted that slavery should never be established in any future-formed State north of lat. 36° 30′.

Mistassini (mis-tas-sē′nē), a large lake in the northeast territory of Canada, as yet imperfectly known, but reputed to be of large size. With Little Mistassini Lake, which is close beside it, it is an expansion of Rupert River, which flows into James Bay.

Mistletoe (mis′l-tō), the *Viscum album* of botanists, nat. order Loranthaceæ, a European plant growing parasitically on various trees, and celebrated on account of the religious purposes to which it was consecrated by the ancient Celtic nations of Europe, being held in great veneration by the Druids, particularly when it was found growing on the oak. It is a small shrub, with sessile, oblong, entire, somewhat leathery leaves, and small, yellowish-green flowers, the whole forming a pendent bush, covered in winter with small white berries, which contain a glutinous substance. It is common enough on certain species of trees, such as apple and pear trees, hawthorn, maple, lime, and other similar trees, but is very seldom found on the oak. Its roots penetrate into the substance of the tree on which it grows, and eventually it kills the branch supporting it. Traces of the old superstitious regard for the mistletoe still remain in Germany and England, as kissing under it at Christmas.

Mistral (mis′tral), a violent cold northwest wind experienced in Provence and other neighboring districts bordering on the Mediterranean, and destroying crops, fruit, blossom, etc. It blows with greatest violence in autumn, winter and early spring.

Mistral (mis-tràl′), Frederi, a modern Provençal poet, born in 1830. His first important work was the epic poem *Mirèio* (popular as the opera *Mireille*, with music by Gounod), which appeared in 1859. Another epic, *Calendou*, came out in 1867; a volume of poems, *Lis Iselo d'Or*, in 1876; *Lou Trésor dou Felibrige*, a dictionary of modern Provençal, in 1878-86. Mistral has devoted much labor to the revival of Provençal literature.

Mitau. See *Mittau*.

Mitchel (mich′el), John, an Irish nationalist, born in county Derry in 1815; died in 1875. He was one of the leaders of the Young Ireland party, was banished to Australia in 1848, escaped in 1853, and became a journalist

MISSOURI

Scale of Miles
0 10 20 40 60

SOUTH EAST CORNER OF MISSOURI
Same scale as large map

93° Longitude West from Greenwich

in America. In 1874 he was returned as member of parliament for Tipperary, but, being disqualified, never took his seat.

Mitchel, Ormsby M., astronomer, born in Morganfield, Kentucky, in 1809. He was professor of astronomy in Cincinnati College from 1836 to 1844, building its large observatory. His observations of stars, nebulæ, etc., have been numerous. In the Civil war he attained the rank of major-general of volunteers. He died in 1862.

Mitchell, a city, capital of Davison Co., South Dakota, 70 miles N. W. of Yankton. It is the seat of the Dakota University, and has railroad repair shops, machine shops, etc. Pop. 6515.

Mitchell, Donald Grant, author, born in Norwich, Connecticut, in 1822. *Reveries of a Bachelor*, perhaps his most popular book, appeared in 1850. Others of his works were *Dream Life, My Farm of Edgewood, Dr. Johns, Rural Studies, English Lands, Letters, and Things*, etc. He wrote under the pseudonym of Ik Marvel. He died in 1908.

Mitchell, Silas Weir, physician, poet and novelist; born in Philadelphia, Pennsylvania, in 1829; studied at the University of Pennsylvania; was graduated at Jefferson Medical College (1850); practiced in Philadelphia and became prominent as a physiologist, especially as a neurologist and toxicologist. His works include *Hugh Wynne, Free Quaker; The Adventures of François; John Sherwood, Iron Master*, and other novels, several volumes of poems, and a number of medical books.

Mite (mīt), a name common to numerous small, in some cases microscopic, animals, of the class Arachnida (spiders) and division Acarida. The cheese-mite is the *Aeărus domesticus*, the flour-mite *A. farīnæ*, the sugar-mite *A. saccharīnus*.

Mitford (mit'furd), Mary Russell, an English authoress, daughter of a physician at Alresford, Hampshire, and born there in 1786; died in 1855. Her best-known work is *Our Village*, a series of prose sketches descriptive of English country life and scenery, drawn from the village of Three Mile Cross, near Reading. A subsequent work, *Bedford Regis*, or *Sketches of a Country Town*, was nearly equally popular. Miss Mitford likewise made several attempts as a dramatist, and three of her dramas, *Julian, The Foscari* and *Rienzi*, were produced on the stage with some success. Her last works were her interesting *Recollections of My Literary Life* and *Atherton*, a novel in three volumes, published in 1854.

Mitford, William, an English historian, born in 1744; died in 1827. He studied at Queen's College, Oxford, and entered the Middle Temple, but early quitted the profession of law, and obtained a commission in the Hampshire militia, of which he became colonel. His early fondness for Greek led him to undertake a *History of Greece*. The first volume appeared in 1784; the fifth and last, bringing the narrative down to the death of Alexander the Great, was published in 1818. Despite its strong antidemocratic prejudices, until the appearance of the works of Thirlwall and Grote, his history was considered the standard. He held the professorship of ancient history in the Royal Academy, and sat in parliament from 1785 till 1818.

Mithras (mith'ras), the Mitra of the Rig Veda, the sun, or the genius of the sun, with the Persians, which was worshiped as a deity at a later period also in Rome. The cultus of Mithras found its way into all parts of Europe visited by the Roman legions. In Germany many tokens of its former existence are still to be found.

Mithridates or Mithradates (mith-ra-dā'tēz), king of Pontus, on the southern shore of the Black Sea, surnamed the *Great*. His father was murdered B.C. 120, and Mithridates ascended the throne at the age of thirteen. Soon after attaining his majority he commenced his career of conquest, which made him master of nearly all Asia Minor, besides Greece, and brought him into conflict with Rome. In B.C. 88, Sulla led a Roman army into Greece, and restored the Roman power in that country. For four years Mithridates disputed possession of Asia, but was at last compelled to succumb, B.C. 84, and to confine himself to his hereditary dominions, though he soon again began the war. After the death of Sulla, which occurred in B.C. 78, Mithridates levied another army with a determination to expel the Romans from Asia. Being defeated by Lucullus, who was appointed consul B.C. 74, he was followed by the victorious Romans into his own states, and driven to seek a refuge in Armenia, then ruled by Tigranes, who refused to deliver him up. Here Mithridates raised a third great army, and in B.C. 67 completely defeated the Romans under Triarius, the lieutenant of Lucullus, who had been recalled; and, following up his success, rapidly recovered the larger part of his dominions. The Romans now invested

Pompey with absolute power in the East, and by him, in B.C. 66, the forces of Mithridates were completely routed near the Euphrates. The king retired to Bosporus (the Crimea), where his troops, headed by his son Pharnaces, broke out in mutiny, and Mithridates killed himself, in B.C. 63.

Mitla (mit'la), a ruined city of Mexico, 15 miles S.•E. of Oajaca, with extensive remains of a prehistoric race.

Mitrailleuse (mit-rå-*yeuz*), a breech-loading machine-gun introduced in France shortly before the Franco-German war of 1870-71. It consisted of a number of rifled barrels, generally thirty-seven, either bound together or bored out of the solid, and mounted on the same principle as an ordinary field-piece. Plungers and springs were fixed in connection with the breech ends of the

Mitrailleuse.

barrels that they might be fired in succession with great rapidity, so as to concentrate a deadly fire upon any desired point.

Miter (mī'ter), a sacerdotal ornament worn on the head by bishops and archbishops (including the pope), cardinals, and in some instances by abbots, upon solemn occasions, or by a Jew-

1, Miter of Jewish High Priest. 2, Miter of English Bishop. 3, Miter of English Archbishop.

ish high priest. It is a sort of cap pointed and cleft at the top, this form being supposed to symbolize the 'cloven tongues' of the day of Pentecost. The pope has four miters, which are more or less rich according to the solemnity of the feast-days on which they are to be worn. The English archbishops have a ducal coronet round their miters.

Mitre (*mitra*), a name of many mollusca inhabiting a small and pretty turreted shell. The shells exhibit a great variety of patterns, and are variegated with every kind of hue. They abound in the seas of hot climates.

Mittau (mit'ou), or MITAU, a town in Russia, capital of the government of Courland, in a low, flat and sandy district on the Aa, 25 miles southwest of Riga. Pop. 35,011.

Mittimus (mit'i-mus), in law, a warrant of commitment to prison; also a writ for removing records from one court to another.

Mittweida (mit'vī-då), a town of Saxony, on the Zschoppau, 36 miles southeast of Leipzig. It has extensive manufactures of textile fabrics. Pop. 16,119.

Mitylene (mit'i-lē-nē). See *Lesbos*.

Mivart, ST. GEORGE, naturalist and scientist, born in 1827; educated at Harrow; King's College, London; and the Roman Catholic College at Oscott. He was called to the bar in 1851, but devoted himself chiefly to science. He was professor of biology at the Roman Catholic College at Kensington, secretary to the Linnæan Society, and vice-president of the Zoölogical Society. Among his works are *The Genesis of Species* (combating the Darwinian 'natural selection'), *Man and Apes*, *Contemporary Evolution*, *The Cat*, *Nature and Thought*, etc. He died in 1900.

Mizzen (miz'n), a term applied to the aftermost mast of a three-masted vessel, that is, the one nearest the stern. In a four-master the jigger-mast comes between it and the stern.

Mjösen. See *Miösen*.

Mnemonics (nē-mon'iks), the art of assisting the memory of methods of association. Many devices have been devised for assisting in the recollection of facts, dates, numbers, or the like, but they all go on the principle of associating the thing to be remembered with something else which can be more easily recollected. The art dates from a very early period, Simonides, the Greek poet (500 B.C.), having devised a system. All the systems are more or less arbitrary, and their chief value would seem to lie in the exercise which they give the memory, thereby strengthening it. Students, salesmen, physicians, etc., frequently

use a mnemonic system. Memorial lines and verses have been extensively used as aids to memory.

Mnemosyne (nē-mos'i-nē; Greek, 'Memory'), in the Greek mythology, daughter of Urănus (Heaven) and Gaia (Earth), and by Zeus the mother of the nine Muses.

Moa (mō'a), an extinct bird of New Zealand. See *Dinornis.*

Moab (mō'ab), the land of the Moabites, a tribe dwelling in the mountainous region east of the Dead Sea. According to the Mosaic account (Gen. xix, 30) the Moabites were descended from Moab, the son of Lot by his eldest daughter. In the time of the judges they were for eighteen years masters of the Hebrews, but in the time of David were rendered tributaries to them. After the Babylonish captivity they lost their separate national existence.

Moabite Stone (mō'a-bīt), a monument of black basaltic granite about 3 feet 5 inches high and 1 foot 9 inches wide and thick, with rounded top but square base, on which there is an inscription of thirty-four lines in Hebrew-Phœnician characters, discovered in 1868 at Dhiban in the ancient Moab. It was unfortunately broken by the natives, but almost the whole of the inscription has been recovered from the broken pieces. The inscription dates about 900 B.C., and is the oldest known in the Hebrew-Phœnician form of writing. It was erected by Mesha, king of Moab, and is a record of his wars with Omri, king of Israel, and his successors.

Moallakat. See *Arabian Literature.*

Moat (mōt) or Ditch, in fortification, a deep trench dug round the rampart of a castle or other fortified place, and often filled with water.

Mobangi (mō-ban'gi), or Ubangi, a river of Central South Africa, a tributary on the right bank of the Congo, which it enters nearly opposite Equator Station, lat. 0° 30′; navigable for upwards of 400 miles, but there are difficult rapids in 40° 20′ E.

Moberly (mō'bèr-li), a city of Randolph County, Missouri, 146 miles W. of St. Louis has railroad machine and car shops and manufactures of carriages, flour, tobacco, etc. It is an important shipping point for farm produce, live stock, tobacco, wool, lumber, etc. Pop. 10,923.

Mobile (mō-bēl'), a city and seaport of Alabama, on the right bank of Mobile River at its entrance into Mobile Bay. It is the capital of a county of the same name. It lies 30 miles N. of the Gulf of Mexico and 140 miles E. N. E. of New Orleans. The city has several handsome public buildings and educational institutions, while the residence section, with its many gardens and its streets shaded with magnolia and live oak, has a pleasant and restful appearance. It has a good harbor, which has been improved to admit vessels of 23 feet draught, and enjoys an important export trade, especially in cotton, it ranking third among the cotton markets of the United States. It also exports large quantities of lumber, shingles, staves, coal, naval stores, fruit and vegetables. Its trade is largely with the South American countries and the West Indies. Its manufacturing industries comprise cotton and cottonseed-oil mills, broom, bucket, sash, blind, and other factories, shipyards, cordage, tobacco and cedar pencil works, etc. Pop. 51,521.

Mobile, a river of the United States, in Alabama, formed by the union of the Alabama and the Tombigbee, which unite about 45 miles above the town of Mobile. It enters Mobile Bay by two mouths.

Mobile, Garde. See *Garde Nationale Mobile.*

Mobile Bay, an estuary of the Gulf of Mexico, from 8 to 18 miles wide, and about 35 miles in length, N. to S., the general depth being 12 to 14 feet.

Mobilier. See *Crédit Mobilier.*

Mobilization (mob-il-i-zā'shun), a military term, being the act of putting troops into a state of readiness for active service. The mobilization of an army or a corps includes not

only the calling in of the reserve and the men on furlough, but the organizing of the staff, as well as the commissariat, medical, artillery, and transport services, the accumulating of provisions, munitions, and the like.

Moccasin (mok'a-sin), a shoe or cover for the feet, made of deer-skin or other soft leather, without a stiff sole, and ornamented on the upper part; the customary shoe worn by the native American Indians.

Moccasin Snake, a very venomous serpent (*Cenchris* or *Ancistrŏdon piscivŏrus*), frequenting swamps in many of the warmer parts of America. It is about two feet in length, dark-brown above, and gray below. It occurs in parts of the Southern United States.

Mocha (mok'a), or MOKHA, an Arabian fortified seaport, on the Red Sea, about 40 miles within the Strait of Bâbel-Mandeb, the chief port and emporium in the dominions of the Imâm of Sanna. It owes its importance to the coffee trade. Pop. 5000.

Mocha-stone, a variety of dendritic agate, containing dark outlines like vegetable filaments, and called also *Moss-agate.*

Mocking-bird, an American bird of the thrush family (*Mimus polyglottus*). It is of an ashy-brown color above, lighter below, and is much sought for on account of its wonderful faculty of imitating the cries or notes of almost every species of animal, as well as many noises that are produced artificially. Its own notes form a beautiful and varied strain. It inhabits North America chiefly, being a constant resident of the Southern States, and but rare and migratory in the northern parts of the continent. It is also found in the West Indian Islands and in Brazil.

Mock-orange. The name given to the sweet Syringa (*Philadelphus coronarius*), a shrub with creamy-white flowers which somewhat resemble orange blossoms. Also the ornamental yellow fruit of the osage orange (*Maclura aurantiaca*), which is called mock-orange in the Southern States.

Mode (mōd), in music, a species of scale of which modern musicians recognize only two, the *major* and the *minor modes.* See *Major, Gregorian Tones.*

Modena (mō'dā-na; anciently, *Mutĭna*), a town of North Italy, capital of the province of its own name, situated in a somewhat low but fertile plain, between the Secchia and the Panaro. It is built with regularity, and has spacious streets, often with arcades on either side. The most remarkable edifices and establishments are the cathedral, a fine specimen of the Lombard style, with interesting sculptures and monuments; a fine campanile; several fine churches; the ducal, now the royal palace, a splendid structure; the university; the public library, of 150,000 volumes, etc. The manufactures and trade are unimportant. Pop. 26,847.—Modena was formerly an independent duchy bordering on Tuscany, Lucca, Bologna, Mantua and Parma; area, 2340 square miles. It is now divided into the provinces of Modena (966 square miles; pop. 315,804), Massa-Carrara, and Reggio. Previous to 1859 Modena was governed by a branch of the house of Este.

Moderator (mod'ėr-ā-tur), the person who presides at a meeting or disputation; now used chiefly as the title of the chairman or president of meetings or courts in the Presbyterian churches. In the Universities of Cambridge and Oxford, public officers appointed to superintend the examinations for honors and degrees are called by this term.

Moderator-lamp, a lamp for burning oil, especially vegetable oil, in which the oil is forced through a tube up towards the wick by a piston pressing on its surface, to which a downward impulse is communicated by means of a spiral spring situated between it and the top of the barrel or body of the lamp. The passage of the oil up the tube is so regulated, or *moderated,* by an ingenious internal arrangement of the tube, that its flow is uniform; hence the name. See *Lamp.*

Modica (mō'dē-kä), a town of Sicily, in the province of and 31 miles w. s. w. of Syracuse. It exports grain, oil, wine, cheese, etc. Pop. 48,962.

Modillion (mo-dil'yun), in architecture, a block carved into the form of an enriched bracket, used under the corona in the cornice of the Corinthian and Composite orders, and occasionally also of the Roman Ionic.

Modjeska (mod'jes-ka), HELENA, a Polish actress, born at Cracow in 1844. She won success at Cracow and played leading parts at Warsaw from 1868 to 1876. She was twice married, emigrating to California with her second husband in 1877. There she returned to the stage, playing in English-speaking parts, and won the reputation of being one of the best emotional actresses. She was popular in such parts as *Juliet, Rosalind, Beatrice, Camille* and *Odette.* She died in 1909.

Modocs (mō′dokz), an American Indian tribe, originally settled on the S. shore of Klamath Lake, California. From 1847 till 1873 they were in continual conflict with the whites. Only a small remnant of them now exists in the Indian territory and in Oregon.

Modugno (mo-dụn′yō), a town of South Italy, province Bari. It has textile factories. Pop. 11,885.

Modulation (mod-ū-lā′shun), in music, the transition from one key to another. The simplest form is the change from a given key to one nearly related to it, namely, its fifth (dominant), fourth (subdominant), its relative minor, or the relative minor of its fifth. Modulation is generally resorted to in compositions of some length, for the purpose of catching and pleasing the ear with a fresh succession of chords.

Modus Vivendi, a phrase signifying 'mode of living,' is now used to signify a temporary arrangement between two countries, providing for the management of certain affairs pending negotiations for a treaty for the final settlement of these affairs.

Möen (m*eu*′en), an island belonging to Denmark, on the southeast of Seeland; area, about 80 square miles. Its highest point above the sea is 460 feet. It is very fertile and picturesque. Pop. 15,780.

Mœris (mē′ris), an ancient lake basin in Egypt, formerly identified with Lake Birket-el-Kurû in the Fayûm. Lake Mœris, long since dried up, lay further to the S. E., and was probably an artificial excavation for the purpose of receiving the superabundant water during the inundation of the Nile, and distributing its contents over the fields when the overflow was insufficient. It is said to have been 450 miles in circumference and about 300 feet deep.

Moero (mō′e-rō), a lake of Central S. Africa, lying southwest of Tanganyika, and drained by the Luapula. It was discovered by Livingstone.

Mœsia (mē′si-a), in ancient geography, a country lying north of Thrace and Macedonia, and south of the Danube, corresponding to the modern Servia and Bulgaria.

Mœso-Gothic (mē′sō), the language of the Mœso-Goths, or Goths of Mœsia.

Mœso-Goths, a tribe of Goths who settled in Mœsia on the Lower Danube, and there devoted themselves to agriculture, under the protection of the Roman emperors. See *Goths*.

Moffat (mof′at), a watering-place of Scotland, in the county of Dumfries, pleasantly situated in an amphitheater of rounded hills in the valley of the Annan. It has mineral springs, a hydropathic establishment, assembly rooms, etc., and is much frequented by visitors in summer. Pop. about 2500.

Moffat, Robert, Scottish missionary traveler, born in 1795; died in 1883. He began missionary work in South Africa in 1813, and in 1818 made a long exploratory tour in the Damara Country. During the visit to Britain in 1842 he published an account of his travels, and a translation of the New Testament and Psalms in the Bechuana language. One of his daughters became the wife of Dr. Livingstone.

Mogador (mog-a-dōr′), a seaport of Morocco, about 110 miles west by south of the city of Morocco. It is fortified, and has a good harbor. The mosques are some of them splendid specimens of architecture. The exports are wool, gum, wax, hides, skins, honey, ostrich feathers, etc. Pop. about 20,000.

Mogul (mō-gul′), a word which is the same as *Mongol*, but is applied particularly to the sovereigns of Mongolian origin, called Great or Grand Moguls, descendants of Tamerlane, who ruled in India from the sixteenth century downwards, the first of them being the conqueror Baber. See *India*.

Mohács (mo′häch), a town of Hungary, on the Danube, 25 miles E. S. E. of Fünfkirchen. It carries on an active trade, being a station for steamers plying on the Danube. Here Solyman the Magnificent defeated the Hungarians in 1526, and the Turks were defeated by the Duke of Lorraine in 1687. Pop. 15,812.

Mohair (mō′hār), the hair of the Angora goat of Asia Minor. It is soft and fine as silk, of a silvery whiteness, and is manufactured into camlets, plush, shawls, braidings, and other trimmings, etc. In France it is used in the manufacture of a kind of lace.

Mohammed (mō-ham′ed), Mahom′et, or more correctly Muhammed, the founder of Islamism, was an Arabian by birth, of the tribe of the Koreish, and was born of poor parents in 571 A.D., in Mecca. His parents died early and he was brought up by his uncle Abu Talib, who trained him to commerce, and with whom he journeyed through Arabia and Syria. In his twenty-fifth year his uncle recommended him as agent to a rich widow, named Chadidja, and he acquitted himself so much to her satisfaction that she married him, and thus placed him in easy circumstances. She was fifteen years older than he, but he lived with her in happy and faithful wedlock. He

seems to have had from his youth a propensity to religious contemplation, for he was every year accustomed, in the month Ramadhan, to retire to a cave in Mount Hara, near Mecca, and dwell here in solitude. Mohammed began his mission in the fortieth year of his age by announcing himself to his own family as the apostle of a new religious mission. His wife was one of the first to believe in him, and among other members of his family who acknowledged his mission was his cousin Ali, the son of Abu Talib. Of great importance was the accession of Abu Bekr, a man of estimable character, who stood in high respect, and persuaded ten of the most considerable citizens of Mecca to join the believers in the new apostle. They were all instructed by Mohammed in the doctrines of *Islam*, as the new religion was styled, which were promulgated as the gradual revelations of the divine will, through the angel Gabriel, and were collected in the Koran (which see). After three years Mohammed made a more public announcement of his doctrine, but for years his followers were few. In 621 Mohammed lost his wife, and the death of Abu Talib took place about the same time. Deprived of their assistance, he was compelled to retire, for a time, to the city of Taïf. On the other hand, he was readily received by the pilgrims who visited the Kaaba (which see), and gained numerous adherents among the families in the neighborhood. Mohammed now adopted the resolution of encountering his enemies with force. Only the more exasperated at this they formed a conspiracy to murder him. Warned of the imminent danger, he left Mecca, accompanied by Abu Bekr alone, and concealed himself in a cave not far distant. Here he spent three days undiscovered, after which he arrived safely at Medina, but not without danger (A.D. 622). This event, from which the Mohammedans commence their era, is known under the name of the Hejra, which signifies *flight*. In Medina Mohammed met with the most favorable reception; thither he was followed by many of his adherents. He now assumed the saçerdotal and regal dignity, married Ayesha, daughter of Abu Bekr, and as the number of the faithful continued to increase, declared his resolution to propagate his doctrines with the sword. In the battle of Bedr (623), the first of the long series of battle by which Islamism was established over a large portion of the earth, he defeated Abu Sofian, the chief of the Koreishites. He in turn was defeated by them at Ohod, near Medina, soon after, and in 625 they unsuccessfully besieged Medina, and a truce of ten years was agreed on. Wars with the Jewish tribes followed, many Arabian tribes submitted themselves, and in 630 he took possession of Mecca as prince and prophet. The idols of the Kaaba were demolished, but the sacred touch of the prophet made the black stone again the object of the deepest veneration, and the magnet that attracts hosts of pilgrims to the holy city of Mecca. The whole of Arabia was soon after conquered, and a summons to embrace the new revelation of the divine law was sent to the Emperor Heraclius at Constantinople, the King of Persia, and the King of Abyssinia. Preparations for the conquest of Syria and for war with the Roman Empire were begun, when Mohammed died at Medina (632). His body was buried in the house of Ayesha, where he died, and which afterwards became part of the adjoining mosque, and a place of pilgrimage for the faithful in all time to come. Of all his wives, the first alone bore him children, of whom only his daughter Fatima, wife of Ali, survived him. There is no doubt that Mohammed was a man of extraordinary insight and deep reflection. Though without book-learning, he had a deep knowledge of man, was familiar with Bible narratives and eastern legends, and possessed a grasp of the eternal ground of all religion, though tinged and modified by his vivid poetic imagination. See *Koran*, *Mohammedanism*.

Mohammed, the name of five Ottoman sultans, of whom the careers of Mohammed I and II are treated under *Ottoman Empire* (which see). Mohammed (or Mahomet) III (1568-1603), and IV (1649-91) were feeble rulers. Mohammed (or Mehmed) V succeeded April 27, 1909, on the deposition of his brother Abdul-Hamid in consequence of a revolution. He was born in 1844, and had spent many years in seclusion before he was taken from his virtual prison to ascend the throne of Turkey.

Mohammed Ahmed. See *Mahdi*.

Mohammed Ali. See *Mehemet Ali*.

Mohammedanism (mō-ham'e-dan-izm), the name commonly given in Christian countries to the creed established by Mohammed. His followers call their creed *Islam* (entire submission to the decrees of God), and their common formula of faith is, 'There is no God but Allah, and Mohammed is his prophet.' The dogmatic or theoretical part of Mohammedanism embraces the following points:—1. Belief in God, who is without beginning or end, the sole Creator and Lord of the universe, having absolute power, knowledge, glory and perfection.

2. Belief in his angels, who are impeccable beings, created of light. 3. Belief in good and evil Jinn (genii), who are created of smokeless fire, and are subject to death. 4. Belief in the Holy Scriptures, which are his uncreated word revealed to the prophets. Of these there now exist, but in a greatly corrupted form, the Pentateuch, the Psalms, and the Gospels; and in an uncorrupted and incorruptible state the Koran, which abrogates and surpasses all preceding revelations. (See *Koran.*) 5. Belief in God's prophets and apostles, the most distinguished of whom are Adam, Noah, Abraham, Moses, Jesus and Mohammed. Mohammed is the greatest of them all, the last of the prophets and the most excellent of the creatures of God. 6. Belief in a general resurrection and final judgment, and in future rewards and punishments, chiefly of a physical nature. 7. Belief, even to the extent of fatalism, in God's absolute foreknowledge and predestination of all events both good and evil.

The practical part of Mohammedanism inculcates certain observances or duties, of which four are most important. The first is prayer, including preparatory purifications. Prayer must be engaged in at five stated periods each day. On each of these occasions the Moslem has to offer up certain prayers held to be ordained by God, and others ordained by his prophet. During prayer it is necessary that the face of the worshiper be turned towards the kebla, that is, in the direction of Mecca. Prayers may be said in any clean place, but on Friday they must be said in the mosque. Second in importance to prayer stands the duty of giving alms. Next comes the duty of fasting. The Moslem must abstain from eating and drinking, and from every indulgence of the senses, every day during the month of Ramadhan, from the first appearance of daybreak until sunset, unless physically incapacitated. The fourth paramount religious duty of the Moslem is the performance at least once in his life, if possible, of the pilgrimage (el-Hadj) to Mecca, after which he becomes a Hadji. Circumcision is general among Mohammedans, but is not absolutely obligatory. The distinctions of clean and unclean meats are nearly the came as in the Mosaic code. Wine and all intoxicating liquors are strictly forbidden. Music, games of chance, and usury are condemned. Images and pictures of living creatures are contrary to law. Charity, probity in all transactions, veracity (except in a few cases), and modesty, are indispensable virtues. After Mohammed's death Abu Bekr, his father-in-law, became his successor, but disputes immediately arose, a party holding that Ali, the son-in-law of Mohammed, was by right entitled to be his immediate successor. This led to the division of the Mohammedans into the two sects known as Shiites and Sunnites. The former, the believers in the right of Ali to be considered the first successor, constitute at present the majority of the Mussulmans of Persia and India; the latter, considered as the orthodox Mohammedans, are dominant in the Ottoman Empire, Arabia, Turkestan and Africa. The propagation of Mohammedanism by conquest took place with extraordinary rapidity and in a very brief period it spread widely through Southern Asia and Northern Africa and made its way into Spain. It has held its own through all this region except Spain, and has been extended through much of Africa south of the Sahara. The total Mohammedan population of the world is estimated at about 175,000,000. See *Caliph*, *Shiites*, *Sunnites*, etc.

Mohammera (mō-ham′ėr-a), a town of Western Persia, province Khuzistan, at the junction of the Karun with Shatt-el-Arab. Pop. 12,000 to 15,000.

Mohawk (mō′hąk), a river of the United States, the principal tributary of the Hudson in the State of New York; length about 135 miles. It affords abundant water-power, and flows through beautiful scenery.

Mohawks, a tribe of North American Indians, belonging to the confederacy of the Five (afterwards Six) Nations. (See *Iroquois.*) They originally inhabited the valley of the Mohawk River. With the rest of the confederacy they adhered to the British interest during the war of the revolution, and left the country on its termination for Canada, where lands were assigned them on the Grand River. Their language has been committed to writing.

Mohicans (mō′hi-kanz), or Mohegans, a tribe of Indians of the great Algonquin family, formerly occupying the country now forming the southwestern parts of New England and that portion of New York State east of the Hudson. They have now disappeared.

Mohilev (mō′hi-lef), a town in Russia, capital of a government of the same name, on both banks of the Dnieper, 212 miles w. s. w. of Moscow. It has spacious streets and a large octagonal square occupied by the principal buildings, among others the palace of the Greek archbishop and the bazaar. The staple manufacture is tobacco; and the

trade with Riga, Memel, Dantzig and Odessa, chiefly in leather, wax, honey, potash, oil and grain, is very extensive. Pop. 43,106.—The government has an area of about 18,545 square miles. Pop. 4,708,041.—There is another Mohilev in the government of Podolia, on the left bank of the Dniester, 60 miles E. S. E. of Kamenetz, with a pop. of 22,100.

Mohilla. See *Comoro Islands.*

Mohur (mō'hur), an Indian gold coin, value fifteen rupees.

Moidore (moi'dōr; from the Portuguese, *moeda d'ouro*, literally, coin of gold), a gold coin formerly used in Portugal (from 1690-1722), of the value of 4800 reis, or about $6.75.

Moir, DAVID MACBETH, better known by his pseudonym of *Delta*, poet and miscellaneous writer, born at Musselburgh, Scotland, in 1798. He adopted the medical profession, as a practitioner of which in his native town the whole of his life was spent. He early showed a turn for literary composition, both in prose and verse, and became a frequent contributor, first to *Constable's* and afterwards to *Blackwood's Magazine*, where his more serious effusions were subscribed by a Λ. In the latter magazine most of his writings in prose and verse, including the inimitable *Autobiography of Mansie Waugh, Tailor in Dalkeith*, first appeared. He died in 1851.

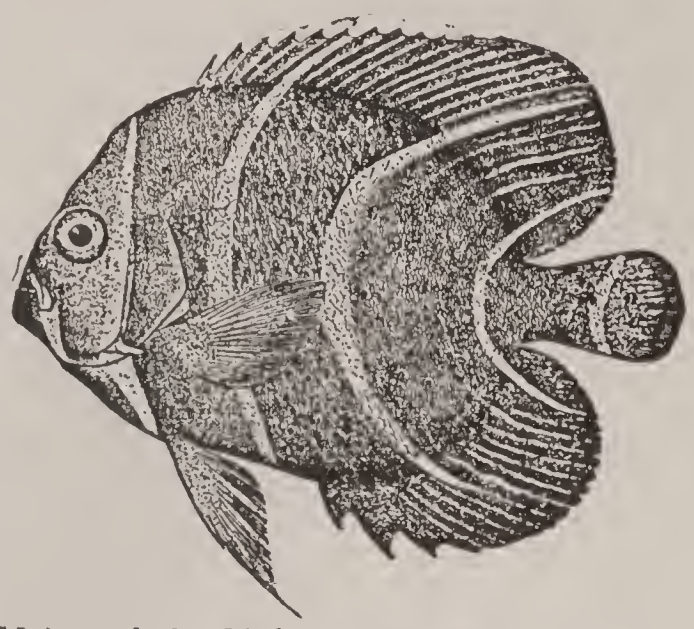
Moiré (mwȧ-rā), the French name given to silks figured by the process called watering. The silks for this purpose, though made in the same way as ordinary silks, are of double width, and must be of a stout, substantial make. They are folded and subjected to an enormous pressure, of from 60 to 100 tons, generally in a hydraulic machine, and the air in trying to escape drives before it the small quantity of moisture that is used, and hence is effected the permanent marking called watering, which is for the most part in curious waved lines. The finest kinds of watered silks are known as *moirés antiques*. Woolen fabrics to which the same process has been applied are called *moreen*.

Moirée Métallique, tin-plate showing a crystallized surface through the action of acids; also, iron-plate coated with tin, and having the coating more or less removed by acids, so as to give it a variety of shades.

Moissac (mwȧs-ȧk), a town of France, dep Tarn-et-Garonne, on the Tarn. Pop. 4523.

Mojanga (mō'jun-ga), a seaport on the northwest coast of Madagascar.

Mojarra de Las Piedras (mō-har'ä), a fish found on the west coast of Mexico and Central America from Mazatlan to Panama.



Mojarra de las Piedras (*Pomacanthus zonipectus*). From Bulletin 47, U. S. Nat. Museum.

Mokanna (mo-kan'na), AL, HAKEM IBN HASHEM, styled the *Veiled Prophet*, a Mohammedan impostor of Persia in the eighth century. He attributed to himself divine powers, and gained many followers, so that at last the caliph was compelled to send an armed force against him. He retired to a fortress in Trasoxiana, where he first poisoned and burned his family, and then burned himself. His followers continued to pay him divine honors after his death. He is the hero of Moore's Veiled Prophet of Khorassan.

Mola-di-Bari (mō'la-dē-bä'rē), a seaport of S. Italy, in the province and 12 miles E. S. E. from Bari, on the Adriatic. The district produces wine and olives. Pop. 13,962.

Molar Teeth. See *Teeth.*

Molasse (mu-las'), a soft greenish sandstone which occupies the country between the Alps and the Jura.

Molasses (mu-las'ez), the uncrystallized syrup produced in the manufacture of sugar. It differs from treacle, as molasses comes from sugar in the process of making, treacle in the process of refining.

Mold (mōld), a borough of North Wales, in Flintshire, 6 miles south of Flint and 12 miles west of Chester. The principal industries are collieries, lead mines, mineral oil works, limestone quarries and potteries in the neighborhood. Pop. 4875.

Moldau (mol'dou), the chief river of Bohemia, which, after passing through Prague, joins the Elbe; length, 260 miles.

Moldavia. See *Roumania.*

Mole (mōl), a name given to insectivorous animals of the genus *Talpa*, family Talpidæ, which, in search of worms or insect larvæ, form burrows just under the surface of the ground, throwing up the excavated soil into a little ridge or into little hills. The common mole (*T. europea*) is found all over Europe, except in the extreme south and north. It is from 5 to 6 inches long; its head is large, without any external ears; and its eyes are very minute, and concealed by its fur, which is short and soft. Its forelegs are very short and strong, and its snout slender, strong and tendinous. Another species (*T. cœca*, or blind mole) is found in the south of Europe. It has its name from its eye being always covered by its eyelid. The Cape mole, or changeable mole (*Chrysochlōris capensis*), is remarkable as being the only mammal that exhibits the splendid metallic reflection which is thrown from the feathers of many birds. The 'star-nosed moles' of North America (*Condylūra macrūra*) are so-named from the star or fringe-like arrangement of the nasal cartilages. The shrew moles (*Scalops*) of North America are more properly included among the shrews.

Mole, a mound or massive work formed of large stones laid in the sea so as to partially inclose and shelter a harbor or anchorage.

Mole-cricket, a name given to certain insects from the peculiar similarity of the anterior extremities of the species, and from the resemblance in their habits, to those of the mole. The best-known species (*Gryllotalpa borealis*), common in the United States, is about 1½ inches long and of a brown color. In making its burrows it cuts through the roots of plants and commits great devastation in gardens. A larger species is found in South America.

Molecule (mol'e-kūl), the smallest quantity of any elementary substance or compound which is capable of existing in a separate form. It differs from *atom*, which is known to us only as a conception, inasmuch as it is always a portion of some molecular aggregate of atoms. *Molecular attraction* is that species of attraction which operates upon the molecules or particles of a body. Cohesion and chemical affinity are instances of molecular attraction. See *Chemistry.*

Mole-marsupial (mōl' mär-sū-pi-al), a small marsupial inhabiting the desert region of South Australia. It has the habits and appearance of a small mole. Its color is

Mole-marsupial (*Notoryctes typhlops*).

pale yellow and the nose has a horny shield; the tail is bare and leathery. The species is very rare. See *Marsupialia.*

Mole-rat, a name given to rodents of the genus *Spalax*, family Spalacidæ. They are dumpish stout-bodied rodents, with short, strong limbs, a short or scarcely any tail, and minute or rudimentary eyes and ears. They make tunnels and throw up hillocks like the mole, but their food appears to consist wholly of vegetable substances. All the species belong to the Old World, *S. typhlus* inhabiting the south of Russia and some parts of Asia.

Moleskin (mōl'skin), a strong twilled cotton fabric (fustian), cropped or shorn before dyeing; much used for workmen's clothing. So called from its being soft, like the skin of a mole.

Molfetta (mōl-fet'ta), an Italian port on the Adriatic, on the railway from Ancona to Brindisi, 15 miles W. N. W. of the city of Bari. It has a cathedral and several other churches and a college; manufactures of linen and saltpeter; a harbor, well sheltered except on the north; and a considerable trade. Pop. 42,363.

Molière (mō-lyār), the assumed name of Jean Baptiste Poquelin, a French comic dramatist, born at Paris in 1622. His father was a tradesman connected with the court, and he received a good education. He studied law, but gave it up for the career of an actor, assuming in this profession the name of Molière. After obtaining great success in the provinces he settled in Paris in 1658, having previously produced his two comedies, *L'Etourdi* and *Le Dépit Amoureux.* In the following year his reputation was greatly advanced by the production of the

Précieuses Ridicules, a delicate satire on the prevailing affectation of the character of *bel esprit*, on the pedantry of learned females, and on affectation in language, thoughts and dress. It produced a general reform when it was brought forward in Paris. Continuing to produce new plays, and performing the chief comic parts himself, he became a great favorite both with the court and the people, though his enemies, rival actors and authors, were numerous. Louis XIV was so well pleased with the performances of Molière's company that he made it especially the royal company, and gave its director a pension. In 1662 Molière made an ill-assorted marriage with Armande Béjart, upwards of twenty years younger than himself, a union that embittered the latter part of his life. Among his works other than those mentioned may be noted: *L'Ecole des Maris*, *L'Ecole des Femmes*, *Le Mariage Forcé*, *Don Juan*, *Le Misanthrope*, *Le Médecin Malgré lui*, *Le Tartufe*, *L'Avare*, *George Dandin*, *Les Fourberies de Scapin*, *Le Malade Imaginaire*, etc. Molière died in 1673 of an apoplectic stroke, a few hours after playing in the latter. As a player he was unsurpassed in high comic parts; and in the literature of comedy he bears the greatest name among the moderns after Shakespere. He borrowed freely from Latin, Spanish and Italian writers, but whatever materials he appropriated he so treated them as to make the result entirely his own and original. The Archbishop of Paris at first refused him burial as being an actor and a reviler of the clergy; but the king himself insisted on it.

Molina (mō-lē'na), Luis, a Jesuit and professor of theology at the Portuguese university of Evora, was born at Cuenca, in New Castle, in 1535, and died in 1601 at Madrid. He has become known by his theory of grace. In order to reconcile man's free-will with the Augustinian doctrine of grace, he published a work in which he undertook to reconcile the free-will of man with the foreknowledge of God and predestination. It caused lengthened discussion, and passed subsequently into the Jansenist controversy. Molina was attacked by Pascal in the Provincal Letters.

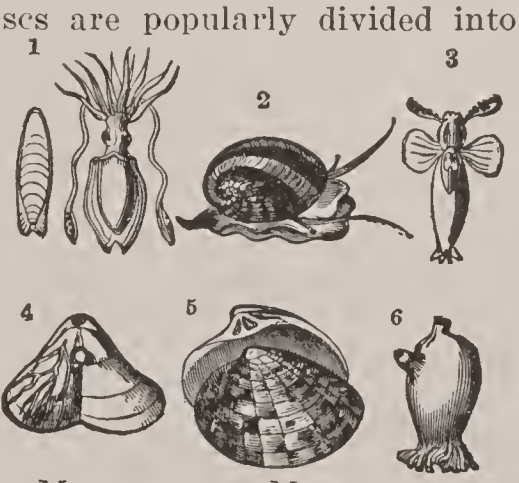
Moline (mo-lēn'), a city of Rock Island County, Illinois, on the east bank of the Mississippi River, about 4 miles above Davenport, Iowa, on the Chicago, Rock Island and Pacific and other railroads, and is an important manufacturing center, having abundant water-power. Here are large plow and corn-planter factories; also steel and iron works, railroad shops, an elevator factory, wagon and carriage works and various other industries. Pop. 24,199.

Molinos (mo-lē'nos), Miguel, a Spanish mystic and theologian, born in 1627; died in 1696. In 1675 he published the *Spiritual Guide*, an ascetical treatise, which promulgated the new religious doctrine known as *Quietism*. In 1685 he was cited before the Holy Office, and in 1687 the Inquisition condemned his works. He spent the rest of his days as a prisoner in a convent of the Dominicans.

Mollah (mol'ə), an honorary title accorded to any one in Turkey who has acquired respect from purity of life, or who exercises functions relating to religion or the sacred or canon law. The title is not conferred by any special authority, but springs spontaneously from public respect. It is nearly equivalent to *master*, *excellency*, in English.

Mollendo (mol-en'dō), a small seaport on the coast of Peru, dep. Arequipa, with a considerable trade. Pop. about 2200.

Mollusca (mol-us'ka), an animal subkingdom, comprising those soft-bodied animals known as slugs, snails, limpets, oysters, cockles, etc. In some the body is naked and unprotected, in others it is enclosed in a muscular sac, but the great majority are provided with an exoskeleton or *shell*. The shell-bearing molluscs are popularly divided into *univalves*, *bivalves* and *multivalves*. The univalves are those whose shell consists of only a single piece, often open and cup-shaped, as in the limpet, or more commonly of a long cone wound spirally round a real or imaginary axis, as the garden-snail, the whelk or periwinkle. The bivalves are those of which the shell is formed of two pieces joined by a hinge, as the cockle and oyster. The multivalves



Mollusca and Molluscoida.

1, *Sepia officinalis* (cuttle-fish) and cuttle-bone—class Cephalopoda. 2, *Nerita albicella*—a gasteropod. 3, A pteropod. 4, *Terebratula diphya*—class Brachiopoda. 5, *Cyrithea maculata*—class Lamellibranchiata. 6, *Cynthia papillosa*—class Tunicata.

have the shell composed of several pieces. These latter molluscs are few in number. The shells of the Mollusca are secreted by the soft integument or *mantle* (also called the *pallium*). The chief mass of the shell is made up of carbonate of lime with a small proportion of animal matter. The mollusca have a distinct alimentary canal, shut off from the general cavity of the body, and situated between the blood system, which lies along the back, and the nerve system, which is towards the ventral aspect of the body to the digestive system consists of a mouth, gullet, stomach, intestine and anus, except in a few forms, in which the intestine ends blindly. The blood is almost colorless. Respiration is variously effected; in the lamp-shells, by long ciliated arms springing from the sides of the mouth; in the bivalve shell-fish, the cuttle-fishes, and most of the univalves, by gills; while in the remainder of the univalves, as snails, slugs, etc., the breathing organs have the form of an air-chamber or pulmonary sac, adapted for breathing air directly. A characteristic of the typical Mollusca is the 'foot' or organ of locomotion, which may be modified so as to perform various offices. Its use in the case of the snail is well known, and in the cockle it is developed to a great size. In some cases (as the razor-shells) it enables the animal to burrow rapidly in the sand; while in the mussels, etc., the organ is devoted to the secretion of the well-known beard or *byssus*, a collection of strong fibrous threads by means of which these animals moor or fix themselves to rocks, etc. In some bivalves (as the oyster) in which the locomotive powers are in abeyance, the foot is rudimentary. In the cuttle-fishes it is represented by the arms or tentacles round the mouth. The chief peculiarity, however, of the Mollusca is in the nervous system, which in the lower forms consists essentially of a single ganglionic mass, giving off filaments in various directions; while in the higher there are three such masses, united to one another by nervous cords. According as they possess one or three ganglia the Mollusca are divided into two great divisions—*Molluscoida*, those having a single ganglion or principal pair of ganglia, and the *Mollusca* proper, possessing three principal pairs of ganglia. The Molluscoida are subdivided into three classes — Polyzōa, comprising the sea-mosses and sea-mats; *Tunicāta*, the sea-squirts; and *Brachiopŏda*, of which Lingula and Terebratula (the lamp-shells) are examples. The Mollusca proper are divided into four classes—*Lamellibranchiata*, in which there is no distinct head, comprising mussels, scallops, oysters,

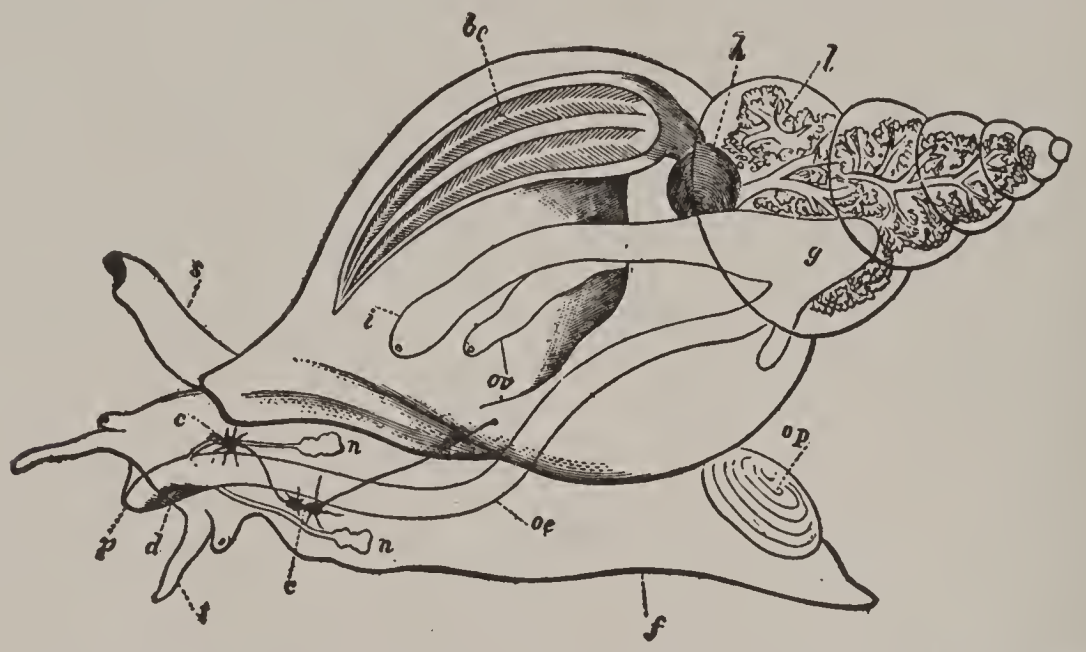


Diagram of the Structure of a Typical Mollusc (the Common Whelk).

f, The muscular foot; *op*, The operculum; *t*, One of the tentacles, or feelers, with an eye at its base; *p*, The proboscis, retracted, with the mouth at its extremity; *oe*, Gullet; *g*, Stomach; *i*, Intestine, terminating in the anus; *n n*, Salivary glands; *l*, The liver and the ovary; *h*, The heart; *bc*, The gill contained in a hood of the mantle; *s*, Breathing-tube or siphon; *c* and *c*, The main nerve ganglia, the one above the gullet being the cerebral ganglia, and the one below the gullet being the combined pedal and parieto-splanchnic ganglia.

Eocene Mollusc (*Crithium tricarinaum*).

etc. · *Gasteropŏda*, comprising the land-snails, sea-snails, whelks, limpets, slugs, sea-lemons, etc.; *Pteropŏda*, all minute oceanic molluscs with wing-like swimming organs; and *Cephalopŏda*, the highest class, comprising the cuttle-fishes, calamaries and squids, in which the shell is small and concealed internally. Some species of Cephalopods become of enormous size as compared with the shelled molluscs. See these headings, also the *Nautilus argonaut*, and other molluscum titles. The Molluscoida are now usually relegated to a distinct sub-kingdom. See different classes and species.

Molluscoida (mol-us-koi'da), or MOLLUSCOIDEA, a group of animals comprising the Polyzoa, Tunicata and Brachiopoda. The nervous system consists of a single ganglion or a principal pair of ganglia, and the heart is wanting or imperfect. This group is regarded by some as a class in the sub-kingdom Mollusca, by others as itself a sub-kingdom. See *Mollusca*.

Molly Maguires, the name assumed by members of a secret illegal association in Ireland, afterwards reorganized in the anthracite coal-mining district of Pennsylvania. The organization was guilty in the latter region of many outrages, and was broken up in 1876, twenty members being hanged for murder.

Moloch (mō'lok), the chief god of the Phœnicians, frequently mentioned in Scripture as the god of the Ammonites, whose worship consisted chiefly of human sacrifices, ordeals by fire, mutilation, etc.

Moloch Lizard, a genus of lizards found in Australia. *M. horridus* (moloch-lizard) is one of the most ferocious-looking, though at the same time one of the most harmless, of reptiles, the horns on the head and the numerous spines on the body giving it a most formidable and exceedingly repulsive appearance.

Molokai (mō-lo-kī'), an island of the Hawaiian group, about 40 miles long by from 7 to 9 broad. It is noted for its settlement of lepers, all persons on the islands found to be affected with the disease being sent by government to Molokai, and kept entirely isolated from the healthy part of the community. Pop. 2581.

Moltke (molt'kė), HELMUTH CARL BERNHARD, COUNT VON, a German field-marshal, born near Mecklenburg in 1800; entered the Danish army in 1819; left that service for the Prussian in 1822, and became a staff-officer in 1832. In 1835 he superintended the Turkish military reforms, and he was present during the Syrian campaign against Mehemet Ali in 1839. He returned to Prussia and became colonel of the staff in 1851, and equerry to the crown prince in 1855. In 1858 as provisional director of the general staff he acted in unison with Von Roon

Field-marsnal Von Moltke.

and Bismarck in the vast plans of military reorganization soon after carried out. The conduct of the Danish war (1864) was attributable to his strategy, as was also the success of the Austro-Prussian war of 1866, and the Franco-Prussian war of 1870-71. In the latter year he was made field-marshal, and became count in 1872. He retired from the position of chief of the general staff in 1888. He died in 1891.

Molucca Crab, the king-crab (which see).

Moluccas (mō-luk'az), or SPICE ISLANDS, a name originally confined to the five small islands of Ternate, Tidore, Motir, Makian and Batshian, but now applied to the widely scattered group lying between Celebes and Papua, between lat. 3° S. and 6° N., and lon. 126° to 135° E. They are divided into the residences of Amboyna, Banda, Ternate and Menado; the southern portion being governed directly by the Dutch, and the northern indirectly through native sultans. The area is about 21,500 square miles, and the population 430,000. The islands (some hundreds in number) are nearly all mountainous, mostly volcanic, and earthquakes are by no means uncommon. They abound in gaily-colored birds and gorgeous insects; and are covered by a luxuriant tropical flora. Cloves, nutmegs, mace, and sago are exported to Europe; and birds'-nests, trepang, etc., to

China. The Moluccas have been for centuries alternately in the possession of the Spaniards, Portuguese and Dutch. They were twice taken by the British and given up to Holland, in whose possession they still remain. The natives belong to Malay and Polynesian races, and the general language on the coast is the Malay.

Molybdenum (mu-lib'de-num), one of the rare metals, of a white silvery color, harder than topaz, and having a specific gravity of 8.6; atomic weight, 96. It is unaltered in the air at ordinary temperatures, but is oxidized when heated. The alloys of this metal are generally less fusible, more brittle, and whiter than the metal with which the molybdenum is alloyed.

Mombasa (mom-bä'sa), or MOMBAS, a town on the east coast of Africa, in lat. 4° 6′, S., on an island 3 miles long by ½ mile broad, with one of the best harbors on the coast. The island and town now form part of the territory over which the British East African Company received governing rights from the Sultan of Zanzibar in 1888. The town is dirty and unhealthy, but exports millet, Indian corn, ivory, copal, sesamum (oil-seed), etc. Pop. about 30,000. On the mainland opposite is Freretown, a settlement of the Church Missionary Society.

Moment of Inertia, the sum of the products of each particle of a rotating body, by the square of its distance from the axis of rotation, thus indicating the exact energy of rotation.

Momentum (mō-men'tum), the quantity of motion of a moving body, measured as the product of the body's mass and its velocity. The unit quantity of momentum most commonly employed is that possessed by a body of the mass of 1 lb. moving with a velocity of 1 foot per second. The C.G.S. unit (see *Dynamics*) is the momentum possessed by a body of the mass of 1 gramme moving with a velocity of 1 centimeter per second.

Mommsen (mom'sen), THEODOR, a German scholar and historian, born in 1817. He was appointed professor of jurisprudence at Leipzig in 1848, professor of Roman law at Zürich in 1852; obtained a similar chair at Breslau in 1854; in 1858 went to Berlin as professor of ancient history. His best-known work is a history of Rome, which has been translated into English; but he has also published many other works on Roman history, law, and antiquities. He died in 1903.

Mömpelgard. See *Montbéliard.*

Mompox (mom-pōkz'), MOMPOS, a town of Colombia, on the Magdalena, 125 miles south of Baranquilla. Founded in 1538, it was at one time of considerable commercial importance, but the capricious changes of the river's course have seriously injured its prosperity. Pop. 10,000.

Momus (mō'mus), the god of mockery and censure among the ancients was the son of Night. He was expelled from heaven for his free criticism of the gods. Momus is generally represented raising a mask from his face, and holding a small figure in his hand.

Mona (mō'na), the ancient name of the island of Anglesea and the Isle of Man.

Mona (*Cercopithēcus mona*), a monkey, sometimes called the *varicgated monkey,* because its fur is varied with gray, red, brown and green. It is often brought to Europe, and is easily tamed.

Monachism (mon'a-kizm). See *Monastery* and *Orders* (*Religious*).

Monaco (mon'a-kō), a principality lying between the French department Alpes Maritimes (Nice) and the Mediterranean. In 1861 the Prince of Monaco sold the departments of Mentone and Roccabruna to France for 4,000,000 francs; and the principality has since then been confined to an area of about 8 square miles, with a pop. of about 15,180. The prince (a scion of the house of Grimaldi) exercises both legislative and executive functions, while the people are exempt from taxation, as the revenue is almost entirely derived from the rents of the gaming establishment. The capital, Monaco (pop. about 3292), situated on a rocky height projecting into the sea, is a renowned watering-place. About a mile to the E. is Monte Carlo, a collection of hotels and villas which have sprung up near the luxurious gardens of the handsome gambling casino, established here in 1860. This institution is now the property of a joint-stock company. The inhabitants of Monaco (*Monégasques*) are not admitted to the gaming tables.

Monad (mon'ad), in philosophy, an imaginary entity in the philosophy of Leibnitz, according to whom monads are simple substances, of which the whole universe is composed, each differing from every other, but all agreeing in having no extension, but in being possessed of life, the source of all motion and activity. Every monad, according to Leibnitz, is a soul, and a human soul is only a monad of elevated rank.

Monad, the term applied to certain minute infusorial organisms of

a low type of organization, consisting each of a little speck of protoplasmic matter furnished with a vibratile filament or *cilium*, and making their appearance in putrescent fluids.

Monaghan (mon'a-gan), a county of Ulster, Ireland, area 497 sq. miles. The surface is hilly, and abounds with small lakes and bogs. The deep soil is favorable to the culture of flax, and the other chief crops are oats and potatoes. Spade husbandry is much practiced; the culture of green crops is increasing, and the linen manufacture is reviving. Monaghan is the county town. The manufacture of linen is the chief employment. Pop. 74,611. The town of Monaghan is 70 miles N. N. W. of Dublin, on the Ulster Canal. Pop. about 2932.

Monarchy (mon'ar-ki) is a state or government in which the supreme power is either actually or nominally vested for life in a single person, by whatsoever name he may be distinguished. A monarchy in which the subjects have no right or powers as against the monarch (*e.g.*, Persia) is termed *despotic* or *absolute;* when the legislative power is wholly in the hands of a monarch, who, however, is himself subject to the law (*e.g.*, Russia), it is termed *autocratic;* but when the monarch shares the power of enacting laws with representatives of the people, the monarchy is *limited* or *constitutional* (*e.g.*, Great Britain). In ancient Greece, a monarchy in which the ruler either obtained or administered his power in violation of the constitution was termed a *tyranny*, however beneficent and mild the rule might be. Monarchies are either *hereditary*, as in Great Britain, or *elective*, as was formerly the case in Poland. Persia, above given as an example of absolutism, no longer holds this position, and at present no absolute monarchy exists.

Monastery (mon'as-tèr-i), a house into which persons retire from the world to lead a life devoted to religion. The practice of monachism or monastic seclusion, though it has been carried to its greatest development within the Christian Church, had its origin in periods long anterior to the Christian era, and has long flourished in countries where Christianity has little or no influence, as among the Brahmans and Buddhists. Christianity was probably not without its ascetics even from the first, but it was not until the close of the third century, when the Neo-Platonic and Gnostic doctrines of the antagonism between body and soul had gained strength, that solitary life began to be specially esteemed. The foundation of the first Christian monasteries is ascribed to Anthony the Great, who about 305, in the deserts of Upper Egypt, collected a number of hermits, who performed their devotional exercises in common. His disciple Pachomius, in the middle of the fourth century, built a number of houses not far from each other, upon the island of Tabenna, in the Nile, each of which was occupied by three monks (*syncelli*) in cells, who were all under the superintendence of a prior. These priors formed together the *cœnobium*, or monastery, which was under the care of the abbot, hegumenos or mandrite, and were obliged to submit to uniform rules of life. At the death of Pachomius, after 348, the monastic colony at Tabenna amounted to 7000 persons. His *rule* or monastic system continued to spread rapidly, reaching even Italy, where it was introduced by Athanasius, and thence extending to other western lands, until it was there superseded by the rule of St. Benedict. In the East it finally gave way to the rule of St. Basil, founded about 375.

Under the Pachomian rule there was not anything more than a tacit renunciation of the world. St. Basil imposed a stricter discipline upon the monasteries that embraced his rule; but Western monasticism, which rapidly spread during the fifth century, was accompanied by many irregularities, until monastic vows were introduced in the sixth century by St. Benedict. The monasteries of the West now became the dwellings of piety, industry, and temperance, and the refuge of learning. Missionaries were sent out from them; deserts and solitudes were made habitable by industrious monks; and in promoting the progress of agriculture and converting the German and Slavonic nations they certainly rendered great services to the world from the sixth century to the ninth. Another incalculable benefit conferred upon civilization by the monasteries is the preservation of nearly the whole of the classic and mediæval MS. literature that we possess.

But monasteries changed their character, to a great degree, as their wealth and influence increased. Idleness and luxury crept within their walls, together with all the vices of the world, and their decay became inevitable, when, by a custom first introduced by the Frankish kings, and afterwards imitated by other princes, they came under the care of lay abbots or superiors, who, thinking only of their revenues, did nothing to maintain discipline among the monks and nuns. These being left wholly to their own government by the bishops, originally their overseers, soon lost their monastic zeal. A few only,

by means of the convent schools (founded by Charlemagne for the education of the clergy), as, for instance, those at Tours, Lyons, Rheims, Cologne, Trèves, Fulda, etc., maintained their character for usefulness till the ninth and tenth centuries. The monastery at Cluny, in Burgundy, first led the way to reform. This was founded in the year 910, under Berno, was governed by the rules of St. Benedict, with additional regulations of a still more rigid character; and attained the position, next to Rome, of the most important religious center in the world. Many monasteries in France, Spain, Italy and Germany were reformed on this model, and the Benedictine rule now first became prominent in Britain through the instrumentality of Dunstan. The Celtic and other monasteries of Britain and Ireland heretofore seem to have had an independent historical connection with the early monachism of Egypt. The reforming spirit also gave birth to so many new orders or modifications of the Benedictine rule (such as the Carthusians and Cistercians), that in 1215 the Lateran Council forbade the formation of any new order. The prohibition, however, was not obeyed. The three great military orders (Templars, Hospitallers and Teutonic Knights) were founded in the twelfth century; while the famous mendicant orders of the Franciscans and Dominicans date from the thirteenth. With the reputation of renewed sanctity the monasteries acquired new influence and new possessions. Many of them ('exempt monasteries') released themselves from all superintending authority except that of the pope, and acquired great wealth in the time of the Crusades from the estates of Crusaders and others placed under the protection of their privilege of inviolability, or even left to them in reversion. But with this growing influence the zeal for reformation abated; new abuses sprang up, and the character of each monastery came, at last, to depend chiefly upon that of its abbot.

The number of monasteries was much diminished at the time of the Reformation, when the rich estates of those in Protestant states were in part appropriated by the sovereign to his own use, in part distributed to nobles and ecclesiastics, and in part devoted to educational and benevolent purposes. In Catholic countries this period was marked by a revival of the spirit of monastic reform; while many new orders were founded whose objects were more directly practical (teaching, tending the sick, visiting the poor) than those of the older and more contemplative orders. Monachism, however, as belonging to the older system of things, was regarded with hostility by the spirit of rationalism and liberalism which found decisive expression in the French Revolution; and during the eighteenth century the monastic orders were obliged, as the papal power diminished, to submit to many restrictions imposed upon them by Catholic princes, or to purchase immunity at a high price. In 1781 the houses of some orders were wholly abolished by the Emperor Joseph II, and those suffered to remain were limited to a certain number of inmates, and cut off from all connection with any foreign authority. In France the abolition of all orders and monasteries was decreed in 1789, and the example was followed by all the states incorporated with France under the protection of Napoleon I. In the nineteenth century, however, under Napoleon III, and during the early years of the republic, monachism prospered in France, though since 1880 only monasteries authorized by the state are permitted to exist. In Germany all orders, except those engaged in tending the sick were abolished in 1875. The unification of Italy was followed by a series of decrees pronouncing all monastic orders illegal. In Portugal monasteries were abolished by decree in 1834, and in Spain in 1837. A severe attack was made on them in Portugal in the revolution of 1910. In Russia the number of such institutions is strictly limited by law. In the states of South America the same policy of abolition has been adopted; whereas in the United States and Canada several orders have made considerable progress. Protestantism has never favored monachism, but in the Episcopal churches of England and America 'sisterhoods' and 'brotherhoods' (especially the former) have been formed at various times, generally with some philanthropic or charitable object. In the Eastern or Greek Church all nuns and the great majority of monks belong to the Basilian order. Some monasteries, including the famous monastery of Mount Sinai, obey the rule of St. Anthony. Monastic institutions for women, usually spoken of as convents or nunneries, date in their earliest form from about the middle of the third century. (See *Nun.*) For the monastic vows see the next article; for further information, see *Orders (Religious)*, *Abbey*, etc.

Monastic Vows (mon-as'tik vous) are three in number—poverty, chastity and obedience. The vow of poverty prevents the monks from holding any property individually. Monasteries, however, professing merely the 'high' degree of poverty may possess

real estate, yet not more than enough for their support, as the Carmelites and Augustines. In the 'higher' degree a monastery may hold only personal property, as books, dresses, supplies of food and drink, rents, etc., as the Dominicans. The 'highest' degree absolutely forbids both real and personal property, as is the case with the Franciscans, and especially the Capuchins. The vow of chastity requires an entire abstinence from familiar intercourse with the other sex; and that of obedience entire compliance with the rules of the order and the commands of the superior.

Monastir (mon-as-tēr'), or BITOLIA, a city of European Turkey, 100 miles N. W. of Saloniki. It is the central military station of Macedonia, and has a large trade. Pop. 60,000.

Monazite (mon'a-zīt), a rare substance, first found in Norway, but discovered in 1893 in North Carolina, and since then in many other places. It is a resinous-like substance, found in sands, and of value as containing several of the rare earths of chemistry. It is a phosphate of cerium, lanthanum, proseodymium and neodymium, containing also silicon and thorium. These salts are among the most refractory substances known and therefore of much value in making incandescent gas mantles, as they will endure great heat for a long period

Monboddo, JAMES BURNETT, Lord, a Scottish judge and metaphysician, born in 1714; died in 1799. His work anticipated Darwin with regard to the descent of man.

Moncton (munk'tun), a city of New Brunswick, Canada, on the Canadian Pacific R. R., 89 miles N. E. of St. John. It is at the head of navigation on the Petitcodiac River, has a good harbor, and manufactures of wooden ware, stoves, cotton and woolen goods, etc. Pop. (1911) 11,345.

Monday (mun'dā; that is, *moon-day;* Anglo-Saxon, *Monandæg;* German, *Montag*), the second day of our week, formerly sacred to the moon.

Mondonedo (mon-dōn-yā'do), a cathedral city near the northwest corner of Spain, province Lugo. Pop. about 10,590.

Mondovi (mon-dō'vi), a town in N. Italy, province of Cuneo, 33 miles west of Genoa. It is walled and defended by a dilapidated citadel. It has a fine cathedral. Pop. of town 5379.

Monessen, a borough in Westmoreland County, Pennsylvania, in the near vicinity of Charleroi. It has manufactures of steel, iron and wire-fencing. Pop. 11,775.

Money (mun'i), in its ordinary sense, is equivalent to pieces of metal, especially gold and silver, duly stamped and issued by the government of a country to serve as a legalized standard of value. In this sense it is more precisely designated *metallic* money, to distinguish it from *paper* money, from which latter it is also distinguished by having an intrinsic value. A few particulars regarding money may here be given as supplementary to information contained in the articles *Currency*, *Coining*, *Bank*, etc. The sovereign and half sovereign are the legal metal standard of value in the United Kingdom and most of the British colonies, and the gold dollar in the United States. By the Latin Monetary Convention, which includes France, Belgium, Italy, Switzerland and Greece, it has been agreed that the gold napoleon and the silver five-franc piece—or corresponding pieces—are to be exchangeable throughout these countries as their standard money; while by the Scandinavian Monetary Convention, which includes Norway, Sweden and Denmark, the gold 20-kroner and 10-kroner pieces are the standard coins. These contracting states have thus agreed to issue no gold or silver coins except of a certain weight, fineness, and diameter. In Germany the 5-mark, 10-mark, and 20-mark pieces are the standard units; while in Austria the silver florin, and in Russia the silver rouble, are the recognized standard coins. *Moneys of account* are those denominations of money in which accounts are kept, and which may or may not have a coin of corresponding value in circulation. In England the pound sterling may be said to be purely a money of account, although there is a coin, the sovereign, of corresponding value. The money unit in various countries is as follows:—United States, the dollar; Britain, the pound sterling; Belgium, France and Switzerland, the franc; Germany, the mark; Austria-Hungary, the florin; Russia, the rouble; Italy, the lira; Spain, the peseta; Sweden, Norway and Denmark, the krona; Holland, the guilder; Portugal, the milreis; Greece, the drachma; Turkey, the piastre; Brazil, the milreis; India, the rupee; China, the liang or tael; Japan, the yen.

Monge (monzh), GASPARD, a French mathematician and natural philosopher, born in 1746; died in 1818.

Monghyr, or MONGHIR (mon-gēr'), a district and town of India, in Bengal. The district, which has an area of 3921 sq. miles, is intersected from east to west by the Ganges. The town stands on the Ganges, 80 miles east of

Patna. It is of considerable antiquity, and has a fort which now contains the public buildings and the bungalows of the European residents. Monghyr, owing to the salubrity of its climate, is a favorite residence of invalid military men and their families. Pop. 35,880.

Mongolia (mon-gō'li-a), a vast region of the northeast of Asia, belonging to the Chinese Empire, is situated between China proper and Asiatic Russia; estimated area, 1,400,000 sq. miles. It is in great part an extended plateau, lying at an elevation of 2500 to 3500 feet. A great part of it is occupied by the Desert of Gobi or Shamo, and on or near its borders are lofty mountain chains, the principal of which are the Altai, the Sayansk, the Khinghan and the Inshan. The inhabitants (estimated at 5,000,000) lead a nomadic life. They possess large herds of cattle, sheep and horses. The climate is in sections intensely hot in summer and bitterly cold in winter.

Mongols, a race of people in the northeast of Asia, whose original seat seems to have been in the north of the present Mongolia, and in Siberia to the southeast of Lake Baikal. Their first great advance was due to Genghis Khan, who having been, originally, merely the chief of a single Mongol horde, entered upon a career of conquest, compelled the other hordes to submit to his power, and then, in 1206, conceived the bold plan of conquering the whole earth. (See *Genghis Khan.*) After the death of Genghis Khan, in 1227, his sons and grandsons pursued his conquests, subjugated all China, subverted the caliphate of Bagdad (1263), and made the Seljuk sultans of Iconium tributary. In 1237 a Mongol army invaded Russia, devastated the country with the most horrible cruelty, and from Russia passed, in two divisions, into Poland and Hungary. At Pesth the Hungarian army was routed with terrible slaughter, and at Liegnitz, in Silesia, Henry, duke of Breslau, was defeated in a bloody battle, April 9, 1241. The Mongols were recalled, however, from their victorious career by the news of the death in December, 1241, of Ogdai, the immediate successor of Genghis Khan. The empire of the Mongols was at the summit of its power during the reigns of Mangu Khan (1251-59) and Khubilai, or Kûblai Khan (1259-94), the conqueror of China and the patron of Marco Polo. At that time it extended from the Chinese Sea and from India far into the interior of Siberia, and to the frontiers of Poland. The principal seat of the *khakan* or great khan was transferred by Khubilai from Karahorum to China; the other countries were governed by subordinate khans, all of whom were descended from Genghis, and several of whom succeeded in making themselves independent. This division of the empire was the cause of the gradual decay of the power and consequence of the Mongols in the fourteenth century. The adoption of new religions (Buddhism in the east and Mohammedanism in the west) also contributed to their fall. In 1368 the empire of the Mongols in China was overturned by a revolution which set the native Ming dynasty on the throne. Driven northwards to their original home, the eastern Mongols remained for a time subject to the descendants of Genghis Khan, but gradually splitting up into small independent tribes, they finally were subdued and absorbed by the Manchu conquerors of China. Of the western Mongols the most powerful were the Kipchaks, or Golden Horde, who lived on the Volga, and the khanate founded in Bokhara, on the Oxus, by Jagatai, the eldest son of Genghis Khan. The former gradually fell under the power of the Russians; but among the latter there appeared a second formidable warrior, Timurlenk (Tamerlane), called also Timur Beg. In 1369 he chose the city of Samarcand for the seat of his new government, the other Mongol tribes, with Persia, Central Asia and Hindustan, being successively subjugated by him. In 1402, at Ancyra (Angora), in Asia Minor, he defeated and captured the Sultan Bajazet I, who had been hitherto victorious against the Christians in Europe, and before whom Constantinople trembled. After Timur's death, in 1405, his empire barely held together until 1468, when it was again divided. Baber (Babur), a descendant of Timur, founded in India, in 1519, the empire of the Great Mogul, which existed in name till 1857, though its power ended in 1739. (See *India.*) After the commencement of the sixteenth century the Mongols lost all importance in the history of the world, became split up into a number of separate khanates and tribes, and fell under the power of the neighboring peoples. Their name still lingers in the Chinese province of Mongolia (see above), but Mongolian tribes are found far beyond its boundaries.

The term Mongolians or Mongolidæ is to some extent used by anthropologists to signify a very large division of the races of men, of which the Mongols proper were considered typical. This use of the name, which includes Tartars, Turks, Finns, Chinese and Japanese, is to be carefully distinguished from the historical use.

Mongoose. See *Mungoose.*

Monica (mon'i-ka), St., mother of St. Augustine, was born in Africa, of Christian parents, in 332. The grief of her life was the worldliness and long heresy of her great son; but she was miraculously assured by a dream of his conversion, and was informed by an aged bishop that 'the child of so many tears could not be lost.' With her other son, Navigius, she followed Augustine to Italy, where she died May 4, 387, at Ostia. Her festival is May 4.

Monier-Williams (m ō' n i -ėr-wil'-lamz), Sir Monier, orientalist, born in 1819 at Bombay, where his father, Col. Monier-Williams, held the post of surveyor-general. He was graduated at King's College, London, and Baliol and University colleges, Oxford. He was professor of Sanskrit at Haileybury from 1844 to 1858, and in 1860 became Boden Sanskrit professor at Oxford. His writings include a grammar and a dictionary of Sanskrit, *Hinduism, Modern India, Religious Thought and Life in India,* etc. He traveled extensively in India, and was knighted in 1886.

Monism (mon'izm), the doctrine that there is only one ultimate principle of being instead of two—mind and matter—as held in *dualism.* Monism may be *idealistic,* explaining matters as a modification of mind, or *materialistic,* explaining mind as an outcome of material energy, or *pantheistic,* referring matter and mind to one original substance.

Monitor (mon'i-tur), the type of a family of lizards (Varanidæ). They are the largest of the Lizard order, some species, such as the *Varanus Niloticus* of the Nile and Egypt, attaining a length of 6 feet. They generally inhabit the neighborhood of rivers and lakes, and feed upon the eggs of crocodiles, turtles, and those of aquatic birds. The name is owing to the belief formerly entertained that these lizards gave warning of the approach of crocodiles.

Monitor, the popular name for a class of very shallow, heavily-armed iron-clad steam-vessels lying very low in the water and carrying on their open decks either one or two revolving turrets, each containing one or more enormous guns, and designed to combine the maximum of gun-power with the minimum of exposure. Monitors are so called from the name of the first vessel of the kind, invented and built in New York by John Ericsson at the beginning of the Civil war, and indicating its powers in the famous engagement with the *Merrimac* in 1862, the first battle between iron-clad war vessels.

Monk (mungk), a man who retires from the world to live in a monastery as member of some religious order. Originally all monks were laymen, but after about the eighth century the superiors, and by degrees other members, were admitted to holy orders. See *Monastery* and *Orders* (*Religious*).

Monk, George, Duke of Albemarle, an English general, famous for the prominent part he took in the restoration of Charles II, was born in 1608. At the age of seventeen he volunteered as a private soldier in the expedition to Cadiz. In the struggle between Charles I and the parliament he at first joined the royalists and was taken prisoner. After the capture of the king Monk took the Covenant and regained his liberty, in 1646. Under the parliament he served in Ireland, and

General Monk.

subsequently with Cromwell in Scotland, and in 1650 he reduced that country to obedience within a few weeks. In 1653 he assisted Admiral Dean in inflicting two severe naval defeats on the Dutch under Van Tromp the elder. Next year he was placed at the head of the English army in Scotland, and he was still in this position at the death of the Protector and at the resignation of his son in 1659. Monk had always been regarded with hope by the royalist party, and he seems to have decided at once upon the restoration, although he used dissimulation and deceit to avoid committing himself either one way or the other until he was tolerably sure of success. The coming over of Charles II was arranged with Monk, and the king rewarded his restorer with the dukedom of Albemarle, the order of the Garter, and with a pension of £7000 a year. Monk now fell into comparative

obscurity. In 1666, however, he once more served against the Dutch at sea, defeating Van Tromp the younger and De Ruyter. He died in 1670, and was buried in Westminster Abbey.

Monkey-bread. See *Baobab.*

Monkey-cup, a name applied to the pitcher-plants.

Monkey-pot, the name given to the fruit of *Lecythis ollaria,* a large Brazilian forest tree. It consists of a hard capsule furnished with a lid, and containing seeds of which monkeys are fond.

Monkey (mung'ki), the popular name applied sometimes to the whole of Cuvier's mammalian order Quadrumana, sometimes limited to those of the order that have tails, and generally cheek pouches, to the exclusion of the apes, baboons and lemurs. The general characters of the mammals of this order are found in the great toe being opposable to the other digits of the foot, so that the feet seem to be converted into 'hands.' The hallux or thumb may be absent, but when developed it is generally opposable to the other fingers; and the animals are thus claimed to possess 'four hands,' or are 'quadrumanous.' This supposed anatomical distinction from man is not maintained by later naturalists. The monkeys may all be divided into a lower and a higher section. The higher section is that of the *Catarhina* (Greek, *kata,* downwards, and *rhines,* nostrils) or Old World monkeys. The catarhine monkeys are distinguished by their obliquely-set nostrils, the nasal apertures being placed close together, and the nasal septum being narrow. Opposable thumbs and great toes exist in nearly all. The tail may be rudimentary or wanting, but in no case is it prehensile. Cheek-pouches, which are used as receptacle for food preparatory to its mastication, are present in many; and the skin covering the prominences of the buttocks is frequently destitute of hair, becomes hardened, and thus constitutes the so-called *natal callosities.* The catarhine monkeys inhabit Asia and Africa. They include the anthropoid or man-like apes; the gibbons, the orang, the chimpanzee and the gorilla; also the baboons and mandrills, the sacred monkey of the Hindus, the proboscis monkey, the Diana monkey, the mona, the wanderoo, etc. The lower section of monkeys consists of the *Platurhina* (Greek, *platys,* broad; *rhines,* nostrils), or New World monkeys, which are entirely confined to South America. They have the nostrils widely separated, the septum or partition between being broad, hence the name. Another peculiarity consists in their prehensile tails; and there are none of the cheek-pouches or hard callosities on the rump so characteristic of Old World monkeys. The diet is especially of a vegetable nature. This section includes the marmosets, the spider-monkeys, the capuchin monkeys, the squirrel-monkeys, the howling monkeys, etc. See *Apes, Baboons,* etc.

Monk-fish. See *Angel-fish.*

Monk-seal. See *Seal.*

Monk's-hood. See *Aconite.*

Monmouth (mon'muth; Welsh, *Mynwy*), a borough of England, the county town of Monmouthshire, is situated in a beautiful valley at the confluence of the Monnow and Wye. The Monnow is here spanned by an ancient stone bridge, and the Wye by a modern one. Monmouth has malleable iron and tin-plate works, paper and corn mills, etc. The castle, of which only fragments remain, was a favorite residence of John of Gaunt, and the birthplace of Henry V. Monmouth, with Newport and Usk, sends a member to parliament. Pop. 5269.—The county lies north of the Bristol Channel and the estuary of the Severn; area 535 sq. miles. A considerable portion of the surface is mountainous and rocky, the remainder consisting of fertile valleys and gentle slopes. The chief rivers are the Wye, the Monnow, the Usk, the Ebbw, and the Rhymney. The production of coal and iron is extensive. Pontypool, Blaenavon, Tredegar, Ebbw, Vale and Rhymney are the headquarters of the coal and iron industries. The manufacture of tin-plate is also extensively carried on. Among the antiquities of the county are remains of Llanthony and Tintern Abbeys, and the fine Norman castle of Chepstow. Pop. 395,778.

Monmouth, JAMES, DUKE OF, the natural son of Lucy Walters, one of the mistresses of Charles II, was born at Rotterdam in 1649, and was always acknowledged by Charles as his natural son, though there were doubts of his paternity. After the Restoration he was created Duke of Orkney and Duke of Monmouth (1663), married the daughter and heiress of the Earl of Buccleuch, and received the Garter. His handsome person, affable address, and distinguished valor obtained him much popularity, but his education was defective, and his capacity mean. It was reported that the king had been privately married to Lucy Walters, and the popular dislike of the Duke of York, afterwards James II, joined with the fact of

Monmouth being a Protestant, gave occasion to hopes that her son might succeed to the crown, though the king expressly declared that the Duke of Monmouth had no claims to legitimacy. In 1679 Monmouth was intrusted with a command in Scotland, and defeated the Covenanters at the battle of Bothwell Bridge, June 22, but was soon afterwards sent beyond seas at the instigation of his uncle. A few months afterwards he returned without leave, and became the center of the popular movement in which the lives of Lord William Russell and Algernon Sidney were sacrificed. The result to Monmouth was his exile in Holland. On the accession of James II he was induced to attempt an invasion of England. He arrived at Lyme Regis with less than a hundred followers (June 11, 1685), but his numbers were soon increased. He proclaimed James the poisoner of the late king, and asserted the legitimacy of his own birth; but from the first there was no likelihood of his success. His small body of undisciplined troops were totally defeated at Sedgmoor, and the duke himself was captured and beheaded July 15, 1685, after abject appeals to the king for mercy.

Monmouth, a city of Illinois, capital of Warren County, 15 miles W. by S. of Galesburg. Coal is found in the vicinity and it has manufactures of pottery and sewer pipe, ploughs, soap, cigars, etc. Here is Monmouth College (United Presbyterian). Pop. 9128.

Monochord (mon'u-kord), a musical instrument with one string, much employed by the ancients in the musical training of the voice and ear. The string, stretched over a board or sounding-box, emits a musical note on being caused to vibrate. The length of the vibrating part of the string may be altered at will by means of a movable bridge, and the relative pitch of the different notes thus produced compared. A modified, or rather developed, form of the instrument is employed to exhibit the law of vibrating strings, and also to illustrate the relations of harmonies and the fundamental ideas of undulations.

Monochrome (mon'u-krōm), a painting executed in a single color. This description of art is very ancient, and was known to the Etruscans. The most numerous examples existing of this kind of painting are on terra cotta. A painting, to be a proper monochrome, must have the figures relieved by light and shade.

Monocotyledon (mon-ō-kot-i-lē'don), a plant with only one cotyledon or seed-lobe. The Monocotyledons form one of the two great classes into which the phanerogamons or flowering plants are divided. See *Endogenous Plants, Botany.*

Monodelphia (mon-u-del'fi-a), one of the three subclasses into which mammals were divided by De Blainville in 1816 in accordance with the nature of their reproductive organs, the other two classes being Ornithodelphia and Didelphia. The Monodelphia are characterized by the fact that the uterus or womb is single, and shows a single uterine cavity. This subclass corresponds with the 'Placental' mammals, and includes all the Mammalia except the monotremes and marsupials.

Monœcious (mu-nē'shus), in botany, having male flowers and female flowers on the same individual plant; opposed to *diœcious.*

Monogram (mon'u-gram), a character or cipher composed of one, two, or more letters interwoven, and used as a sign or abbreviation of a name or word. The use of monograms was common among the Greeks and Romans, and the art of combining and contorting letters and words flourished universally in the middle ages. The term is now applied to conjoined initials of a personal name on seals, trinkets, letter-paper and envelopes, etc., or employed by printers, painters, engravers, etc., as a means of distinguishing their work.

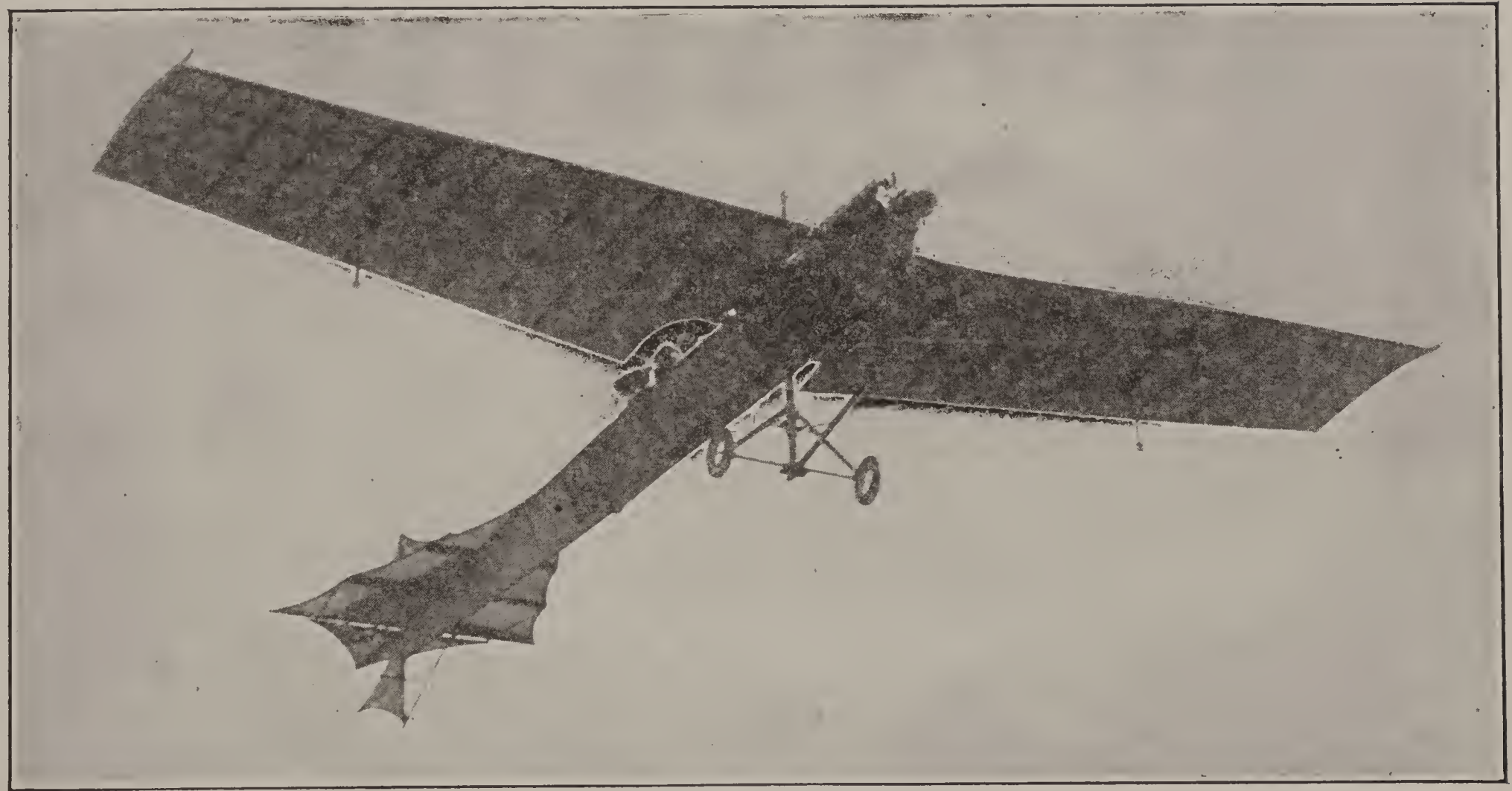
Monograph (mon'u-graf), a work in which a particular subject in any science is treated by itself, and forms the whole subject of the work. Monographs have contributed much to our knowledge, especially in the department of the natural sciences.

Monolith (mon'u-lith), a pillar, statue, or other large object cut from a single block of stone. The obelisks of Egypt are well-known examples.

Monomania (mon-u-mā'ni-a), the name given by some physicians to that form of mania in which the mind of the patient is absorbed by one morbid idea or impulse, and the person seems to be insane only in one direction. Dipsomania and kleptomania are regarded as two varieties of monomania.

Monometallism (mon-u-met'al-izm), the principle of having only one metallic standard in the coinage of a country; opposed to *bimetallism.*

Monongahela (mō-non-ga-hē'la), a river of the United States, formed by the union of West Fork and Tygart's Valley in West Virginia,



ANTOINETTE MONOPLANE
Showing one of the most famous aeroplanes in flight.

runs north into Pennsylvania, and unites with the Allegheny, at Pittsburgh, to form the Ohio. It is navigable for large boats 60 miles, and for small boats 200 miles from its mouth. Its length is 300 miles.

Monongahela, a city of Washington County, Pennsylvania, on the river of the same name, 32 miles S. of Pittsburgh. It has coal mines, iron and glass works, paper mills, etc. Pop. 7598.

Monopetalous (mon-u-pet'a-lus), in botany, having the petals united together into one piece by their edges; otherwise called *gamopetalous*.

Monophysites (mu-nof'i-sīts), those who maintained that there was but one nature in the incarnate Christ, that is, that the divine and human natures were so united as to form but one *nature*, yet without any change, confusion, or mixture of the two natures. They were condemned as heretics by the Council of Chalcedon in 451. The Eastern and Egyptian clergy were inclined to the Monophysite doctrine, while the Western church contended for the decree of the council. After long and often bloody contests, the orthodox church succeeded in overawing the heresy in the first half of the sixth century. In Egypt, Syria and Mesopotamia the Monophysite congregations, however, remained the strongest, had patriarchs at Alexandria and Antioch, existing, without interruption, by the side of the imperial orthodox patriarchs; and after Jacob Baradæus, had, about 570, established their religious constitution, formed the independent churches of the Jacobites and Armenians, which have maintained themselves ever since. The Coptic Christians of Egypt and the Abyssinian Church are also Monophysites in doctrine.

Monoplane (mon'o-plān), an aeroplane, or heavier than air flying machine, which has a single gliding board, in distinction to the *Biplane*, or double-plane machine. See *Aeroplane*.

Monopoli (mo-nop'ō-lē), a seaport of South Italy, on the Adriatic, in the province and 25 miles E. S. E. of Bari. It has a cathedral, manufactures of woolen and cotton cloth, and a trade in wine and olives. It is the residence of an archbishop. Pop. 22,616.

Monopoly (mu-nop'o-li) is an exclusive right, conferred by authority on one or more persons, to carry on some branch of trade or manufacture. The monopolies most frequently granted were the right of trading to certain foreign countries, of importing or exporting certain articles, or of exercising particular arts or trades. The entire trade and industry of the middle ages was characterized by attempts to erect and maintain monopolies, as evidenced by the trade-guilds and such associations as the Hanseatic League. The discovery of the New World only provided a fresh sphere for the same system; for not only did every government endeavor to monopolize the trade of its colonies, but in nearly every case the new countries were opened up by privileged 'adventurers' and jealous monopoly companies. The granting of monopolies has at all times been opposed to the spirit of English common law, but the practice was very common previous to the accession of the Stuarts. The abuse reached its height under Elizabeth. In most countries there are certain so-called government monopolies maintained on various grounds of public policy. Examples of such monopolies are the postal and telegraph service, the tobacco monopoly in France, the opium monopoly in India, the salt monopoly in Italy, etc. The only government monopoly in the United States is the Post Office. Patents and copyrights granted to individuals are monopolized during the term of their existence. There are also numerous quasi-monopolies, such as those enjoyed by railway, water, and gas companies, and similar semipublic organizations. The monopolies known as trusts, or business organizations, are viewed with great disfavor by the people, and laws have recently been passed to control their operations, and in some instances, where they seemed in illegal restraint of trade, their dissolution has been decreed.

Monorail (mon'u-rāl), a railway consisting of a single rail. Two types of these are in use: (1) An overhead rail, from which the car hangs, with a wheel running on the rail. (2) The gyroscope railway, in which the car is kept erect on a single rail by the use of revolving gyroscopes. See *Gyroscope Railway*.

Monosepalous (mon-u-sep'a-lus), in botany, having the sepals united together into one piece by their edges; otherwise called *gamosepalous*.

Monotheism (mon'ō-thē-izm), the belief in, and worship of, a single, personal God; opposed to polytheism and distinct also from pantheism. It was at one time the received opinion that monotheism was the primeval intuitive form of religion, but most recent authorities now hold that it was everywhere posterior to polytheism, whence it was evolved by a gradual education. *Henotheism*, which Max Müller and Schel-

ling maintain to be the primeval form, is merely the rudimentary phase of polytheism in minds not yet conscious of the complexity of the problems for which polytheism is suggested as the solution by more developed intellects. The three great modern monotheistic religions are Judaism, Christianity, and Mohammedanism. The Jewish prophets had a firm persuasion of one God, the Father and Judge of all; but they are continually upbraiding the people for lapsing into polytheism. After the Babylonish captivity the people became fixed in their belief. Christian monotheism is, of course, historically a development of Hebrew monotheism; and Mohammed probably borrowed the doctrine from the same source. Both Jew and Mohammedan regard the Trinitarian conception of Deity as a deviation from the pure doctrine of monotheism.

Monothelites (mo-noth'e-litz), a sect of heretics who maintained that Christ had but *one will* (Gr. *monos*, single, *thelein*, to will). Their doctrine was the logical extension of the heresy of the Monophysites, who were all Monothelites. The sect rose into prominence in the seventh century, but a synod of the Lateran formally adopted the opposite doctrine of dyothelism, which has since been the orthodox doctrine in both the Western and the Eastern churches. The heresy, which at once caused a great commotion in the church, gradually became extinct except in the Monophysite churches.

Monotremata (mon-u-trē'ma-ta), the lowest subclass of Mammalia, corresponding to the *Ornithodelphia* of De Blainville, having only one common cloacal outlet for the fæces and the products of the urino-genital organs, in this respect as well as others, noticeably in producing eggs, resembling birds. The jaws have no teeth, at most having horny plates which serve the same purpose. There are no external ears. This subclass includes but two genera, *Ornithorhynchus* and *Echidna*. The former has but one species, the *Ornithorhynchus paradoxus*, or duck-billed watermole of Australia; the latter genus includes two species, the *Echidna hystrix*, or porcupine ant-eater of Australia, and the *E. setosa* of the same country. See *Ornithorhynchus* and *Echidna*.

Monotype (mon'o-tīp), a type-setting machine differing from the Linotype (*q.v.*) in its power of setting single letters, instead of complete lines.

Monreale (mon-rā-ä'lā), or Morreale, a town in Sicily, in the province and 5 miles W. S. W. of Palermo. It originally sprang up around the magnificent cathedral and Benedictine convent founded here in the beginning of the twelfth century by the Norman Prince William II. Pop. (commune) 23,778.

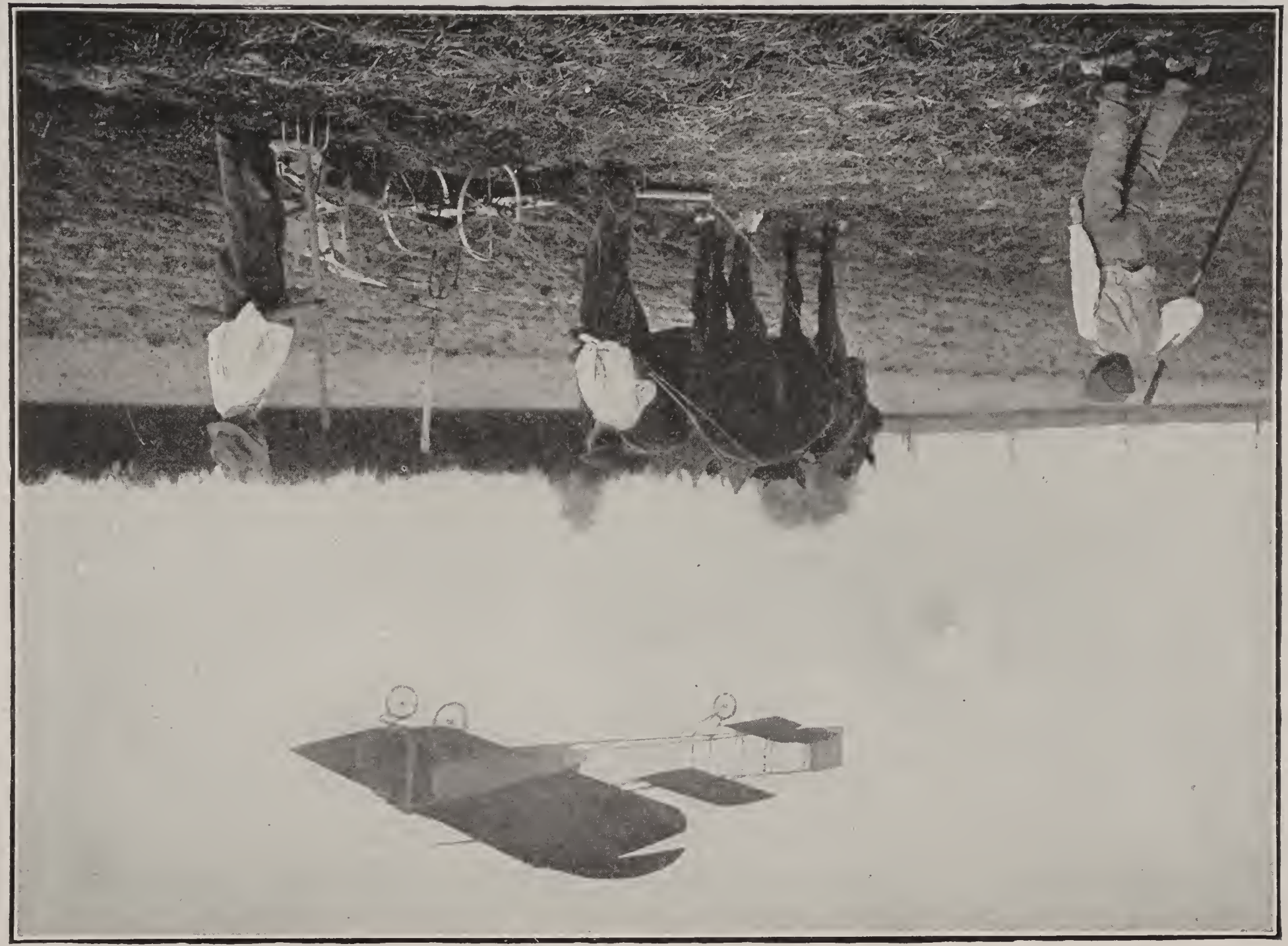
Monro (mon-rō'), Alexander, distinguished as 'Primus' or first, anatomist and founder of the Edinburgh Medical School, was born in London in 1697; died in 1767; studied in Edinburgh, afterwards in London under Cheselden, in Paris under Bouquet, and at Leyden under Boerhaave. After his return in 1719 he became demonstrator in anatomy and surgery in Edinburgh University, and in 1725 obtained the chair of anatomy and surgery. He took an active part in promoting the erection of Edinburgh Infirmary, and in establishing a connection between it and the medical faculty of the university. His principal works are *Osteology, a Treatise on the Anatomy of the Human Bones and Nerves;* and an *Essay on Comparative Anatomy* (1733-47.—His son (1738-1817), ('Secundus') succeeded to his chair in 1759.—Alexander Monro ('Tertius'), son of the latter, succeeded in 1808.

Monroe, a city, capital of Monroe County, Michigan, on the Raisin River, 2 miles from Lake Erie, and 35 miles S. of Detroit. It has extensive tile factories and nurseries, paper mills, and various other industries, and a large shipping trade in telegraph poles. Pop. 6893.

Monroe, capital of Ouachita parish, Louisiana, on the Washita River, 74 miles W. of Vicksburg. It has a large trade in cotton, and has oil mills, cotton compress and oil factories. Pop. 10,209.

Monroe (mon-rō'), James, fifth President of the United States of America, was born in 1758 in Westmoreland county, Virginia; died at New York in 1831. He was educated at William and Mary College, and from 1776 till 1778 served in the Revolutionary army. He then devoted himself to the study of law. In 1782 and in 1787 he was elected a member of the Virginia Assembly, and from 1783 till 1786 he represented Virginia in Congress. In 1788 as a member of the Convention of Virginia he strenuously opposed the ratification of the new Federal constitution. In 1790 he was elected to the Senate of the United States. In 1794-96 he was minister plenipotentiary to France. From 1799 till 1802 he was governor of Virginia, and in 1803 he returned as envoy-extraordinary to France on a mission which resulted in the acquisition of Louisiana for $15,000,000. He was afterwards employed on diplomatic

BLERIOT'S MONOPLANE FLYING ACROSS COUNTRY



service in England and Spain. In 1811 he was governor of Virginia; in 1811-17 he was Secretary of State, being also Secretary of War in 1814-15. In 1816 the Democratic Republican party elected him to the presidency of the United States. The Federalist party went out of existence with this election, and in 1820 there was no opposition to Monroe, the candidate of the Democratic Republicans. Only one electoral vote was cast against him, this by a delegate who declared that no one but Washington should have the unanimous vote of the electoral college. Mexico and the emancipated countries of South America were formally recognized by the American government during Monroe's second term; but the leading event in it was the promulgation of the Monroe Doctrine. (See following article.)

Monroe Doctrine, THE, a principle in international politics, corresponding in America to the balance of power in Europe, was formulated in President Monroe's message of December 2, 1823, in the statement that the United States would consider any attempt to extend the European political system to any portion of America as dangerous to the peace and safety of the American nations. At the same time the American continents were declared to be no longer subjects for colonization by any European power. The doctrine has several times been reasserted, notably in the case of Napoleon III during his Mexican invasion, and more recently by presidents Cleveland and Roosevelt. Though the doctrine has all the force of a first principle in the United States, it has never been formally sanctioned by Congress. See full text under *United States.*

Monrovia (mon-rō'vi-a), a seaport of West Africa, the capital of the State of Liberia, founded in 1824, and named after President Monroe. Pop. 5000.

Mons (mons; Flemish, *Bergen*), a fortified town of Belgium, capital of the province of Hainault, 27 miles E. S. E. of Tournay, on the Trouille, here crossed by four bridges. It was until 1862 one of the strongest fortresses of Europe, but the fortifications were then demolished and their site occupied by a fine boulevard. The principal buildings are the late Gothic church of St. Waltrude (Ste. Waudru), built in 1450-1589; the late Gothic townhall, dating from the middle of the fifteenth century; and the Renaissance belfry (1662), belonging to the old palace, which is now a lunatic asylum. The manufactures consist of linen, woolen and cotton fabrics, firearms, cutlery, soap, etc. Coal is extensively mined in the vicinity. In 804 Mons, which occupies the site of one of Cæsar's forts, was made the capital of Hainault by Charlemagne. It has figured much in history. Pop. 27,072.

Monseigneur (mon-sān-*yeur*; abbreviated *Mgr.;* pl. *Messeigneurs*), a title of dignity in France. Under Louis XIV the dauphin was styled *monseigneur*, without any addition. Princes, dukes and peers, archbishops, bishops (who adopted the title at the close of the seventeenth century), cardinals, marshals of France, presidents of parliaments, etc., were addressed by this title.

Monsieur (mo-syeu; abbreviated *M.;* plural *Messieurs*, abbreviated *MM.*), used without any addition, formerly in France designated the king's eldest brother, though, in addressing him, the title Monseigneur was used. The last prince so called was the Comte d'Artois, brother of Louis XVIII. In common use it answers both to the English *sir* and *Mr.*, and is also used before titles.

Monsoon (mon'sön), the name given to a certain modification or disturbance of the regular course of the trade winds which takes place in the Arabian and Indian seas. Between the parallels of 10° and 30° south latitude the eastern trade wind blows regularly, but from the former parallel northwards the course is reversed for half the year, and from April to October the wind blows constantly from the southwest. During the other six months of the year the regular northeast trade wind prevails. These two alternating winds are the monsoons proper, but the name is now frequently given to similar alternating winds in any region.

Monster (mon'ster), or MONSTROSITY, a term applied in anatomy and physiology to living beings which exhibit from birth onwards some important abnormal features in structure, or present notable deviations from the normal type of their kind. The science which investigates such abnormal forms is known as *teratology.* Monsters present very wide variations in the characters and degrees of the malformations, ranging from an almost imperceptible to an almost total deviation from the normal type. But there are definite types of monstrosities, distinguished by distinct anatomical characters, just as there are definite types of normal structure; and the former may be classified by considering the fœtus or embryo. The anatomist may at once detect all fictitious cases of monstrosities by noting that they present characters

perfectly incompatible with any known type of abnormal development. Tales of monsters occurring in man and in beasts are met with in the writings of the older anatomists and naturalists; but such accounts, if not entirely destitute of truth, owe most of their interest to the liberal embellishment with which they have been recorded. Old writers have argued for the production of such ideal monsters by the intercourse of demons and women, of brutes and men; and witchcraft, magic, spell, divine vengeance—and, more lately, the effect upon the mother's mind of fright, terror, dreams, etc.—have each and all been credited, but equally erroneously, with causing malformations and abnormalities in the yet unborn child or embryo. Teratology can explain most, if not all malformations, as results of abnormal growth or disease. These so-called '*freak*s of nature' are in truth the results of morbid actions and operations in the living organism, as well defined, but not yet so well known, as are those of the healthy and normal body. Among the prominent or primary causes in the production of monstrosities in the human embryo are the following:—Deficiencies or deformations in the reproductive organs and conditions of the father or mother, or of both parents; diseases or malpositions of the placenta or afterbirth, or of the fœtal membranes; retardation in the development of the fœtus itself, arising from pressure, injuries, or actual disease either originating from the germ itself or communicated from the mother; and the presence of actual or potential disease in either or both parents. Injuries to the mother may also to some extent affect the embryo, though most authorities are doubtful on the point. Malformations and monstrosities are frequently met with in the lower animals, and particularly in those which are domesticated by man. In the plant world monstrosities also occur.

Monstrance.

Monstrance, or RE-MONSTRANCE (rē-mon'strans), called also *ostensorium* or *expositorium*, is the sacred vessel in which, in the Roman Catholic Church, the host is shown to the people at benedictions, processions, and other solemnities. Its use probably dates from the establishment of the festival of Corpus Christi in 1264 by Pope Urban IV. The earliest monstrances known date from the fourteenth century, and are made in the form of a Gothic tower. The most common form now consists of a chalice-footed stand of some precious metal, and a circular repository, usually a transparent pyx, surrounded by sun-like rays. In the Greek church the monstrance is shaped like a coffin.

Montagnards (mon-tàn-yär), or LA MONTAGNE, 'the Mountain,' a popular name in French history, given to the extreme democratic party in the convention, because they occupied the higher rows of benches in the hall where it met. The chiefs of 'the Mountain' were Danton, Marat, and Robespierre, the men who introduced the 'Reign of Terror.' The Mountain rose to the height of its power in June, 1793, and for more than a year it was sufficiently formidable to stifle all opposition. Soon after the fall of Robespierre (July 28, 1794) the name of 'Montagnard' and 'Montagne' gradually disappeared from party nomenclature. A futile attempt was made by the extreme party in the National Assembly, after the revolution of 1848, to revive the title of 'Mountain.'

Montagu (mon'ta-gū), LADY MARY WORTLEY, famous for her brilliant letters, was born in 1689. She was the eldest daughter of Evelyn Pierrepont, afterwards duke of Kingston. In 1712 she made a runaway match with Mr. Edward Wortley Montagu, a wealthy Whig scholar, who had quarreled with her father. On the accession of George I in 1714 Mr. Montagu obtained an official position in London, and Lady Mary emerged from the rural seclusion in which she had hitherto spent her life. Her beauty and elegance and her wit and vivacity rapidly gained her admiration and influence, and she became familiarly acquainted with Addison, Congreve, Pope, and other distinguished writers. In 1716 Mr. Montagu was appointed ambassador to the Porte, and Lady Mary accompanied him to Constantinople, where they remained from January, 1717, to May, 1718. It was during this period that Lady Mary's famous *Turkish Letters* were written. On her return to England she resumed her ascendency in the gay world of wit and fashion. She had, however, the misfortune to quarrel with Pope, and a long and keen literary war ensued, which did honor to neither. In 1739 Lady Mary left England to spend the remainder of her days on the Continent, but returned and died in 1762. Her

letters are marked by great vivacity and graphic power, together with keen observation and independent judgment. Lady Mary has another claim to remembrance in her courageous adoption of the Turkish practice of inoculation for smallpox, and for her energy in promoting its introduction into England.

Montague (mon-tāg′), a town (township) of Franklin Co., Massachusetts, bounded on the west by the Connecticut River and 52 miles W. of Fitchburg. It has extensive manufactures. Pop. 6866.

Montaigne (mon-tān′; Fr. pron. moṇ-ten-y′), MICHEL EYQUEM DE, the famous French essayist, was born in 1533 at the castle of Montaigne, in Périgord. He learned Latin conversationally before he could speak French, and Greek was also an early acquisition. At the age of six he became a pupil at the Collége de Guienne at Bordeaux, and at thirteen he began to study law. Little is known of his youth and early manhood. He was a parliamentary counselor from 1554 till 1567; he seems to have seen some military service in 1556; he married the daughter of a fellow counselor; and at some period was appointed a gentleman of the chamber to the king. In 1571, however, he retired to his ancestral château, and devoted himself to peaceful study and meditation. In 1580 he published the first two books of his *Essais*, and immediately afterwards set out on a journey through Germany, Switzerland, and Italy to restore his health, which had been shattered by the attacks of a hereditary disease. In 1582 and 1584 he was chosen mayor of Bordeaux. In 1588 he republished his *Essais*, with the addition of a third book. After a last visit to Paris (in the course of which he was thrown into the Bastile for a short time by the Leaguers) Montaigne seems to have dwelt quietly in his château. He died of quinsy in 1592. Montaigne's *Essais* have at all times been one of the most popular books in the French language. They embrace an extraordinary variety of topics, which are touched upon in a lively and entertaining manner, with all the raciness of strong native good sense, careless of system or regularity. Sentences and anecdotes from the ancients are interspersed, with his own remarks and opinions, and with stories of himself in a pleasant strain of egotism, and with an occasional license, to which severer moralists can with some difficulty reconcile themselves. His *Voyages*, a diary of his journeys in 1580-82, the MS. of which was discovered 180 years after his death, were published in 1774. There are two English translations of the *Essais*, one by Charles Cotton, and an earlier one by John Florio.

Montalambert (moṇ-tȧ-lȧṇ-bār), CHARLES FORBES RENÉ, COMTE DE (1810-70), a French publicist, politician, historian and theologian, born in London in 1810; died at Paris in 1870. His father was a French emigré, afterwards a peer in France under the Restoration; his mother was English. Till 1819 Montalambert's education was carried on in England; but it was concluded in Paris. At the age of twenty he enthusiastically supported Lamennais and Lacordaire in their movement to promote liberty within the church; but when *L'Avenir*, the organ of the movement, was condemned by an encyclical letter from the pope in August, 1832, he turned his attention elsewhere. In 1835 he took his seat in the chamber of peers, and his eloquence, sincerity, and ability soon made him one of the most influential orators in the chamber. After the revolution of 1848 he was elected a member of the National Assembly. He was at first inclined to support Napoleon III, but was soon alienated by the policy of that emperor. Failing to be elected in 1857, he spent the remainder of his life in writing and traveling. Montalambert was an ardent lover of liberty, and yet a firm believer in aristocracy and ultramontanism. He had a profound admiration for the social and political institutions of England. Of his very numerous writings the chief is his *Monks of the West* (English transl. 1861-68). Others are *Vie de Ste. Elisabeth de Hongrie* (1836) and *L'Avenir Politique d'Angleterre* (1885).

Montana (mon-tȧ′na), one of the Western United States, organized as a territory in 1864 out of portions of the territories of Idaho and Dakota, admitted as a State in 1889. It is bounded on the north by Canada, east by the Dakotas, south by Wyoming and Idaho, and west by Idaho, and its area is 146,997 sq. miles. The surface is generally mountainous, the great range of the Rocky Mountains extending across the State, while minor chains occur in different parts. The principal rivers are the Missouri, the Yellowstone, and Clark's Fork of the Columbia. While largely mountainous, the State has broad areas of farming and grazing land, it being estimated that its farming area is equal in extent to the State of Iowa, its mountain and grazing area to Indiana, and its forest and Indian reserves to Georgia. While the rainfall is very scanty, the mountain valleys in the west

are exceedingly fertile, and irrigation, both private and governmental, is steadily bringing a wider area under cultivation. The leading agricultural products are wheat and oats, and fruit has become a very promising industry. The products of the farms promise soon to exceed those of the mines in value. Grazing is also very active, and in sheep farming and wool production Montana leads all the other States. Cattle and horses are also largely kept. The mineral wealth is very great, and the original settlement of the State was due to the discovery of gold and silver in abundance. Copper, lead and iron are also found, and large deposits of bituminous and lignite coal have been discovered. The production of copper is very large; until recently it was the largest of any State in the Union, and it is now surpassed only by that of Arizona. Among the animals are the bison or buffalo (now nearly extinct), the grizzly bear, the Rocky Mountain sheep, the moose, and the antelope. The pine, fir, and cedar abound. The water power of the State is abundant and not much interrupted by freezing or drought. A portion of the Yellowstone National Park is within this State, and also the great Falls of the Missouri. It is crossed by the Northern Pacific and Great Northern Railroads. The capital is Helena. Pop. 376,053.

Montanus (mon-tā'nus), the founder of a Christian sect, appeared about the middle of the second century in Phrygia, as a new Christian prophet, advocating an ascetic code of morals and behavior, fasting, celibacy, and willing submission to martyrdom. He sought to establish a community of all true believers at Pepuza in Phrygia, there to await the second Advent. The Montanists were forced to withdraw from the Catholic Church and form themselves into a separate sect in Phrygia about 180. In North Africa they flourished for some time, but by the fourth century they seem everywhere to have disappeared or been merged with other sects.

Montargis (moṇ-tär-zhē), a town of France, department of Loiret, on the Loing, 39 miles E. N. E. of Orleans. It has the remains of a fine castle, a favorite royal residence before Fontainebleau. Montargis has manufactures of paper, etc. Pop. 11,038.

Montauban (moṇ-tō-bäṇ), chief town of the department of Tarn-et-Garonne, in France, is finely situated on the Tarn, 120 miles S. E. of Bordeaux. Active manufactures of silk, wool, etc., are carried on. Montauban was a stronghold of the Huguenots, and the Protestants still maintain an academy and a theological college. Pop. 16,813.

Montbéliard (moṇ-bā-ā-lyär; Ger. *Mömpelgard*), a walled town of France, in the department of Doubs, 40 miles northeast of Besançon. It is a busy industrial town, with manufactures of clocks and watches, hardware and textile fabrics. Pop. 8723.

Mont Blanc (moṇ-blaṇ; that is 'White Mountain'), the loftiest mountain of Europe, belonging to the Pennine chain of the Alps, and rising 15,781 feet above the sea-level, is situated on the frontiers of France and Italy, and near that of Switzerland. The main portion of the mountain and the highest summit are in France (Haute Savoie). The huge mountain mass (30 miles long by 10 miles wide) is almost entirely granitic. It has numerous summits, some rounded, some sharp (aiguilles). On the S. E. its face is steep; on the N. W. lateral chains are sent off, among which about thirty glaciers are counted. The chief are the glaciers Des Bossons, Bois, Argentière and Mer de Glace. The summit was first reached in June, 1786, by the guide Jacques Balmat.

Montbrison (moṇ-brē-sōṇ), a town of France, department Loire, on the Vizezy. Pop. 6564.

Montcalm (moṇ-käm), Louis Joseph Saint Veran, Marquis de, a French general, born in 1712. Having entered the army he distinguished himself in several campaigns in Europe, and in 1756 was appointed to the chief command of the French troops in Canada, during the French and Indian war. Here he took Fort Ontario (Oswego) and Fort William Henry (on Lake George), and occupied Ticonderoga (1758); but at Quebec, in 1759, was completely defeated by General Wolfe on the Heights of Abraham, both commanders being mortally wounded.

Montclair (mont-klār'), a city of Essex County, New Jersey, 5 miles N. N. W. of Newark. It is situated at the base and on the slopes of Orange Mountain, and is a place of residence for many New York and Newark business men. Pop. 21,550.

Mont de Marsan (moṇ dė märsäṇ), a town of France, capital of the department of Landes, at the junction of the Douze and Midou. Pop. 9059.

Mont-de-Piété (moṇ-dė-pē-ā-tā; in Italian *Monte di Pietà*), a name for banks of charity which lend money on pledges at a low rate of interest, and whose aim is purely philanthropic. These institutions were estab-

DOMINION OF CANADA
SOUTH DAKOTA
NORTH DAKOTA
MONTANA
WYOMING
ROCKY MOUNTAINS
Kootenai R.
Milk R.
Missouri R.
Yellowstone R.
Big Horn R.
Powder R.
Tongue R.
Lismas R.
Judith
Musselshell R.
Teton R.
Marias R.
Sun River
Dry L.
Flathead L.
Flathead R.
Mission Range
Swan Range
Mission Mts.
Little Belt Mts.
Big Belt Mts.
Crazy Mts.
Pryor Mts.
Big Snowy Mts.
Judith Mts.
Moccasin Mts.
Bull Mountains
Pumpkin Buttes
Pine Buttes
Big Timber Creek
Sweet Grass Cr.
Timber Cr.
Sheep Cr.
Tullock Cr.
Big Dry Cr.
Prairie Dog Cr.
Box Elder Cr.
Big Sandy Cr.
Beaver Cr.
Rosebud R.
Little Missouri R.
Fork Cr.
Yellowstone Lake
YELLOWSTONE NATIONAL PARK
BLACKFEET IND. RES.
FLATHEAD IND. RES.
FORT PECK INDIAN RES.
CROW IND. RES.
NORTHERN CHEYENNE IND. RES.
Gateway
Tobacco
Rexford
Marston
Stryker
Columbia Falls
Whitefish
Kalispell
Troy
Libby P.O.
Lakeview
Heron
Noxon
Trout Creek
White Pine
Thompson
Eddy
Wallace
Saltese
Plains
Ronan
St. Ignatius
Arlee
Martina
Superior
Iron Mountain
Quartz
Lothrop
Frenchtown
Woodworth
Clearwater
Missoula
Woodman
Lolo
Florence
Bonner
Clinton
Coloma
Garnet
Helmville
Ovando
Fulton
Craig
Hogan
Augusta
Elizabeth
Choteau
Saypo
Bynum
Raymond
Dupuyer
Browning
Kipp P.O.
Shelby
Sweetgrass
Westbutte
Hill
Alma
Chester
Galata
Beatrice
Ft. Assiniboine
Box Elder
Big Sandy
Maddux
Riedell
Ada
Lloyd
Cleveland
Malta
Avery
Harlem
Chinook
Havre
Dodson
Ashfield
Carr
Glasgow
Nashua
Oswego
Wolfpoint
Poplar
Brockton
Culbertson
Plentywood
Scobey
Sandcliffs
Hays
Phillips
Warrick
Landusky
Brookside
Leedy
Newlon
Kismet
Jordan
Glendive
Bloomfield
Wibaux
Fallon
Cedar
Terry
Madeline
Blatchford
Lacomb
Shirley
Westmore
Knowlton
Tonquin
Miles City
Ft. Keogh
Mizpah
Baker
Teedee
Dodge
Hathaway
Etna
Hockett
Garland
Sabra
Ekalaka
Powderville
Midland
Capitol
Ericson
Broadus
Fivemile
Ridge
Alzada
Graham
Moorhead
Otter
Selway
Kingsley
Ashland
Lameeer
Lee
Stacey
Brandenberg
Rosebud
Pompeys Pillar
Anita
Miffin
Toluca
Ft. Custer
Coburn
Crow Agency
Garry
Owen
Lodge Grass
Wyola
Kirby
Decker
Aberdeen
Ewing
Sheridan
Arvada
Como
Fourche R.
Belle
Shoshone R.
Big Horn R.
Grey Bull R.
Cody
Yellowstone Lake
Gardiner
Grayling
Red Rock
Dell
Lima
Monida
Lakeview
Camas
St. Anthony
Red Lodge
Cooke
Berwind
Roberts
Fishtail
Bowler
Rosebud
Absarokee
Contact
Chico
Nye
Livingston
Brisbin
McLeod
Reed
Stillwater Cr.
Carbon
Silesia
Kelser
Pryors
Frommberg
Gebo
Columbus
Park City
Laurel
Billings
Bigtimber
Howie
Busteed
Melville
Dorsey
Bigelk
Twodot
Lavina
Elso
Bull Mountain
Custer
Junction
Rancher Sta.
Myers
Sanders
Howard
Forsyth
Rosebud
Lock
Hanards
Melstone
Gage
Roundup
Musselshell
Harlowton
Yale
Garneill
Long
Pinegrove
Rockford
Flatwillow
Weede
Antrim
Sumatra
Galbraith
Gilt Edge
Grassrange
Maginnis
Valentine
Christina
Everson
Kendall
Denton
Stanford
Maiden
Philbrook
Barker
Neihart
Utica
Martinsdale
Castle
Diamond City
Winston
Townsend
Greenwood
Toston
Radersburg
Lombard
Eustis
Josephine
Melrose
Divide
Dewey
Whitehall
Ferguson
Mammoth
Pony
Norris
Meadowcreek
Saiesville
Willow Creek
Manhattan
Logan
Belgrade
Bozeman
Chestnut
Hunters Hot Sprs.
Rockcreek
Clyde Park
Meyersburg
Sedan
Silver Bow
Butte
Walkerville
Whitehall
Limestone
Twin Bridges
Sheridan
Laurin
Jackson
Polaris
Dillon
Bannack
Grant
Alder
Grayling
Homepark
Cameron
Aldridge
Virginia City
Adobetown
Twin
Willis
Tex
Briston
Rochester
Wisdom
Salmon
Lemhi R.
Big Hole R.
Deer Lodge
Racetrack
Garrison
Granite
Bearmouth
Elkhorn
Boulder
Basin
Jefferson
Clarkston
Helena Valley
E. Helena
Helena
Marysville
Mitchell
Wolfcreek
Clancy
Unionville
Elkhorn
Radersburg
Corvallis
Victor
Stevensville
Chicago
Stone
New
Florence
Lolo
Woodman
Bonita
Drummond
Gold Cr.
Garrison
Granite
Racetrack
Carlton
Bernice
Elkpark
Wilma
Anaconda
Barby
Eyelin
Sula
Alta
Wisdom
Salmon
Bannack
Grant
Red Rock
Lyon
Dell
Lima
Monida
Lakeview
Camas
St. Anthony
Gardiner
Grayling
Yellowstone Lake
Cody
Shoshone R.
Big Horn R.
Grey Bull R.
Belle Fourche R.
Como
Sheridan
Aryada
Powder R.
Tongue R.
Rosebud R.
Little Missouri R.
Fork Cr.
Big Timber Creek
Sweet Grass Cr.
Timber Cr.
Sheep Cr.
Tullock Cr.
Big Dry Cr.
Prairie Dog Cr.
Box Elder Cr.
Big Sandy Cr.
Beaver Cr.
Rosebud R.
Little Missouri R.
Fork Cr.
Yellowstone Lake
YELLOWSTONE NATIONAL PARK
BLACKFEET IND. RES.
FLATHEAD IND. RES.
FORT PECK INDIAN RES.
CROW IND. RES.
NORTHERN CHEYENNE IND. RES.
Scale of Miles
0 10 20 40 60 80 100
Size of type indicates
relative importance of places.
C. S. HAMMOND & CO., N.Y.
116° A 115° B 114° C 113° D 112° E 111° F 110° G 109° H 108° J 107° K 106° L 105° M 104°
49° 48° 47° 46° 45° 44°
1 2 3 4 5
A 115° B 114° C 113° D 112° E 111° Long. F 110° West G from 109° H Green. 108° J 107° K 106° L 105° M

lished to prevent the scandal and abuse of usury, and exist in Italy, France, the Netherlands, Spain, etc. In Britain pawnbrokers take the place of monts-de-piété.

Mont Dore (moṇ dōr), a village with mineral springs and baths in Central France, dep. Puy de Dôme, situated among the mountains known as Monts Dore, highest summit Puy de Sancy (6100 ft.). Pop. 1677.

Montebello (mon-tā-bel'lō), a village in North Italy, 25 miles E. N. E. from Alessandria, noted for two Austrian defeats. On June 9, 1800, the victors were the French under Lannes, afterwards Duke of Montebello; and on May 20, 1859, the allied troops of France and Sardinia under Gen. Forey.

Monte Carlo (mon'tē kär'lō). See *Monaco.*

Monte Casino (mon'tā kȧs-sē'-nō), a famous Italian Benedictine monastery near San Germano, on the route between Rome and Naples. It was founded in 529 by St. Benedict on the site of an ancient temple of Apollo, to which Dante alludes, and which commands a magnificent prospect. It became renowned for its privileges and wealth, and its library grew rich in MSS. As a monastery it was dissolved in 1866, but it continues to exist in the form of an educational establishment. The church is magnificent, and contains the remains of St. Benedict.

Monte Cristo (m o n't ā krēs'tō), a small island 6 miles in circumference belonging to Italy, 25 miles S. of Elba, the seat of a penal colony. Dumas has given the name of this isle to the hero of one of his most popular romances.

Montecuculi (m o ṇ - tā-kö'ko-lē), or more correctly, MONTECU'COLI, RAIMONDO, Prince of the Empire, and Duke of Melfi, military commander, born near Modena, Italy, in 1608; died at Linz in 1680. He entered the Austrian service, and served during the Thirty Years' war with great distinction. After the Peace of Westphalia (1648) he visited Sweden and England in a diplomatic capacity; and in 1657 the emperor sent him to the aid of the King of Poland against Rakoczy and the Swedes, and next year he assisted the Danes against the latter. In 1664 he gained a great victory over the Turks, after having driven them out of Transylvania. In 1673 he was placed at the head of the imperial troops, and checked the progress of Louis XIV by the capture of Bonn, and by forming a junction with the Prince of Orange in spite of Turenne and Condé. Montecuculi's subsequent advance into Alsace was repulsed by the Prince of Condé. His last military exploit was the siege of Philipsburg.

Montefiore (m o n - t e - fi - ō'rā), SIR MOSES, a Jewish philanthropist and centenarian, was born in England in 1784; died in 1885. In 1837 he was chosen sheriff of London, the same year he was knighted, and in 1846 he was made a baronet. His benevolence to Jews throughout the world was unbounded; and he visited Palestine seven times, the last when in his 92d year.

Montego Bay (m o n - tē'gō), a seaport, situated on a bay of the same name on the N. W. coast of Jamaica. The bay is an open roadstead, and is exposed to storms from the north. Pop. about 6000.

Montelimar (moṇ-tā-li-mär), a town of F r a n c e, dep. of Drôme, at the junction of the Roubion and Jabron, formerly a stronghold of the Huguenots. Its old castle is now used as a prison. It has manufactures of silk, hats, leather, etc. Pop. 9162.

Montemayor (mon-tā-mȧ'yōr), JORGE DE, a Spanish p o e t, born about 1520; died in 1561. In his youth he was a soldier, but he afterwards entered the service of Philip II as a singer, and accompanied t h a t prince abroad. After his return he lived in Leon, where he wrote his celebrated *Diana Enamorada* (1542), the earliest Spanish pastoral romance.

Montenegro (m o n-tā-nā'grō; native *T z r n a g o r a*, Turkish *Karadagh*, all meaning Black Mountain), an independent kingdom of Europe, in the northwest of Turkey, bounded by Herzegovina, Albania, the Adriatic and Dalmatia. Area, about 3630 sq. miles. The surface is everywhere mountainous, being covered by an extension of the Dinaric Alps, rising to the height of 8850 ft. There are, however, a few beautiful and verdant plains and valleys, in which the soil is tolerably fertile. The principal river is the Moratcha. About half of the Lake of Scutari, besides several smaller lakes, lies within the Montenegrin boundary. The climate is healthy. Forests of beech, pine, chestnuts, and other valuable timber cover many of the mountain sides. Fruit trees of all kinds abound, especially in the sheltered valleys, where even almonds, vines, and pomegranates ripen. Agriculture is in a very rude and inefficient state, though every cultivable piece of land is planted with Indian corn, potatoes, tobacco, rye, wheat, cabbages, or some other useful plant. Sheep, cattle and goats are reared in great numbers.

Manufactures, with exception of a coarse woolen stuff, are unknown. The chief occupations of the Montenegrins are agriculture and fishing, trade being altogether left to foreigners. The exports are sheep and cattle, provisions, sumach, honey, hides, cheese, butter, and other agricultural produce. The chief towns (in reality little more than villages) are Cettinje (2000 inhabitants), the capital; Podgoritza (4000 inhabitants); Niksich, and the seaports Dulcigno and Antivari. The Montenegrins are pure Serbs and speak a Serbian dialect. They are generally of tall stature and well proportioned. The men go at all times fully armed, whatever be the occupation in which they are engaged, and all between 14 and 50 years of age (estimated at 29,000) are liable to military service. In religion they are of the Greek church. Education, once neglected, is now free and compulsory.

Montenegro, first appearing as a principality under the name of Zeta in the fourteenth century, was subject to the great Servian kingdom till about 1389. In 1516 the secular prince abdicated in favor of the Archbishop Vavil, who then formed Montenegro into a theocratic state, under an autocratic vladika or celibate prince-bishop. The dignity was inherited through brothers and nephews, and after 1697 became hereditary in the family of Petrovitch Njegos. The history of Montenegro for many years is a record of deadly struggles with the Turks, and of a slowly-growing civilization among its inhabitants. In 1852 Danilo I became vladika, but in 1855 he married, threw off his ecclesiastical character, assuming the title of Hospodar or prince, and transformed his land into a secular principality, the independence of which was soon recognized by Russia. Danilo was assassinated in 1860, and the present ruler, Nicolas I Petrovich, became Hospodar. In 1861-62 he engaged in a not altogether successful war against Turkey; but in 1876 he joined Servia and in 1877-78 Russia against his hereditary foe, with the result that 1900 square miles were added to his territory by the Treaty of Berlin. Montenegro was raised to the dignity of a kingdom in 1910, Prince Nicolas being ceremoniously crowned as King Nicolas. It is the smallest of kingdoms, alike in area and in population, its inhabitants being estimated at 311,564.

Montereau (mon-tė-rō), a town of France, department of Seine-et-Marne, at the confluence of the Yonne and the Seine. Pop. 7870.

Monterey (mon-te-rā′), capital of the State of New Leon, in Mexico, about 100 miles from the Texas frontier. Monterey, which is said to be the most Americanized town in Mexico, has a considerable transient trade, and nearby are lead, copper and silver mines. In 1846 it was captured by the United States troops under General Taylor. Pop. 62,226.

Monte Rosa. See *Rosa.*

Monte-Sant-Angelo (mon′tā sänt ä n′ jā-lō), a town of S. Italy, 28 miles northeast of Foggia, has a picturesque castle and numerous churches. Pop. 17,369.

Monte Santo. See *Athos.*

Montespan (m o n̨ - t e s-päṇ), Françoise Athenais, Marchioness de, mistress of Louis XIV, born in 1641, was the second daughter of the Duke of Mortemart, and was, in 1663, married to the Marquis de Montespan. To the most fascinating beauty she added a natural liveliness and wit, and a highly cultivated mind. Soon after her appearance at court she attracted the king's attention, and from 1668 till 1674 she shared his favor with Mlle. de la Vallière. The latter, however, withdrew in 1674; M. de Montespan had already been ordered to retire to his estate. Mme. de Montespan bore eight children to the king, four of whom died in infancy. The others were intrusted to the care of Mme. Scarron, afterwards de Maintenon. The influence of the favorite mistress was often exercised in public affairs, and her empire over the king continued until about 1679, when a growing attachment to Mme. de Maintenon finally estranged his affections from Mme. de Montespan. She rarely appeared at court after 1685, and in 1691 she entirely quitted it. Her last years were devoted to religious exercises, acts of benevolence, and penitence.

Montesquieu (m o n̨ - t e s - k y *e u*), Charles Louis de Secondat, Baron de la Brède et de, born in 1689 at the château of La Brède, near Bordeaux; died at Paris in 1755. He studied law; in 1714 became a counselor of the parliament of Bordeaux; and in 1716, on the death of his uncle, parliamentary president and Baron de Montesquieu. The *Lettres Persanes*, the first of the three great works on which his fame principally rests, appeared in 1721. Purporting to consist of the correspondence of two Persians traveling in France, this book is a lively satire upon the manners and customs, and the political and ecclesiastical institutions of the author's age and country. Other works of less importance followed; and in 1728

Montesquieu was admitted to the French Academy. He gave up his president's office in 1726, and then visited Germany, Hungary, Italy, Holland and England. In England he stayed for eighteen months, and imbibed a deep admiration for its social and political institutions. He returned to France in 1731, and in 1734 he published his *Considérations sur les Causes de la Grandeur et la Décadence des Romains*. In 1748 *L'Esprit des Lois*, the result of twenty years of labor, was published, and at once placed its author among the greatest writers of his country. The scope of the work is perhaps best indicated by the subtitle of the original edition, which describes it as a treatise on the relation which ought to exist between the laws and the constitution, manners, climate, religion, commerce, etc., of each country. Among his lesser works are *Dialogue de Sylla et d'Eucrate; Le Voyage de Paphos; Essai sur le Goût* (unfinished); *Arsace et Isménie* (probably a work of his youth); *Lettres Familières*, etc.

Montevideo (mon-tē-vid'ē-ō), capital of Uruguay, is situated on a small peninsula on the north coast of the estuary of the La Plata, 130 miles east-southeast of Buenos Ayres. Montevideo is one of the best built towns in South America, and enjoys one of the finest climates. The principal buildings comprise the cathedral, the town house, the Solis opera house, the custom-house, exchange, etc. There is a university with 60 professors and nearly 700 students. The commercial development of Montevideo, considerable as it is, has been much retarded by the shallowness of its harbor. Extensive dry docks have been recently constructed. Over 60 per cent. of the tonnage entering and clearing at Montevideo is British. The chief exports are wool, hides, tallow, dried beef, and extracts of flesh. The chief imports are British cottons, woolens, hardware, and other manufactured articles. Montevideo sends out above half the whole exports of Uruguay, and receives all but a small fraction of the imports. Pop. 312,946, one-third of whom are foreigners.

Montezuma (mon-te-zö'ma), Aztec emperor of Mexico when Cortez invaded the country in 1519. Influenced by an ancient prophecy, he at first welcomed the Spaniards; but when he discovered that they were no supernatural beings he secretly took measures for their destruction. Cortez on learning this seized Montezuma, and compelled him to recognize the supremacy of Spain. The Aztecs immediately rose in revolt, and refused to be quieted by the appearance of Montezuma. While urging them to submission he was struck on the temple with a stone and fell to the ground. Cut to the heart by his humiliation, he refused all nourishment, tore off his bandages, and soon after expired.

Montfort (mont'fort), Simon de, Earl of Leicester, famous in the constitutional history of England, was born in France between 1195 and 1200. He was the youngest son of Simon de Montfort, Earl of Leicester, the 'scourge of the Albigenses.' He won the favor of Henry III, and married Eleanor, countess dowager of Pembroke, and sister of the king. From 1248 till 1252 he acted as the king's 'locum tenens' in Gascony; but complaints of his despotic rule led to a trial before the lords, which resulted in his acquittal and a violent, though temporary, quarrel with Henry. De Montfort withdrew to France, where he declined the important office of high steward, and on his return to England, in 1254, took a prominent part in the disputes between the crown and the barons; giving proof, however, of broader constitutional principles than the other great barons, who thought merely of the privileges of their own order. He was conspicuous among those who extorted the Provisions of Oxford from the king in the 'Mad Parliament' in 1258; and he was the leader of the barons in the so-called 'Barons' war' that followed. In 1264 he agreed to submit the question of the king's right to repudiate the Provisions to Louis XI of France; but when the latter, by the Mise of Amiens, decided in favor of Henry, De Montfort refused to be bound by the decision. Both sides took up arms, and at the battle of Lewes (May 14, 1264), the king was defeated and taken prisoner. The Mise of Lewes, to which Henry III agreed, contained the outlines of a new constitution, in which the principle of representative government was recognized; but this principle was carried a step farther in the famous parliament of De Montfort, which was summoned to meet at Westminster on January 20, 1265. The distinctive feature of the new parliament was the fact that, for the first time, writs were issued for the election of members from cities and boroughs as well as from the counties. For this reason Simon De Montfort is sometimes spoken of as the 'founder of the House of Commons'; though the regular representation of cities and boroughs in parliament did not really begin till 1295. The king accepted the constitution on February 14, 1265; but Prince Edward and the Mortimers raised the standard of revolt. At the battle of Evesham (August

4, 1265) De Montfort was defeated and slain. His memory was long revered by the people as a martyr for the popular liberty. See also *England* (*History*) and *Henry III.*

Montgolfier (mont-gol'fe-ėr), JOSEPH MICHEL (1740-1810) and JACQUES ETIENNE (1745-1799), joint-inventors of the balloon, were born at Vida-lon-lès-Annonay, in the department of Ardéche, in France. Their first balloon, inflated with rarefied atmospheric air, ascended from Annonay in 1782, and the invention soon brought them fame and honors. Joseph was also the inventor of the water-ram. See *Aeronauties.*

Montgomery (mont-gum'e-ri), or MONTGOMERYSHIRE, an inland county in North Wales, has an area of 797 sq. miles, consisting mostly of wild, rugged, and sterile mountains, varying from 1000 to 2000 feet in height. It contains, however, some fine and fertile valleys, the most extensive and fruitful of which is that of the Severn, the principal river. The county is almost entirely occupied by the slate-rocks which overspread so large a portion of Wales. Lead and zinc are procured, and also some copper. The cultivation of the soil is carried on chiefly in the narrow valleys, and on the east side of the county, bordering on Salop. Wheat and oats are the principal crops; and orchards and gardens are numerous on the east side of the county. In the hilly districts cattle and great numbers of small and hardy ponies, commonly called *merlins*, are reared. Flannels are manufactured, as are also a kind of cottons called 'Welsh plains.' Montgomery is the county town, but the largest town is Welshpool. Pop. 53,147.—MONTGOMERY, the county town, a mere village, belongs to the Montgomery district of boroughs, which includes Llanfyllin, Llanidloes, Machynlleth, Montgomery, Newton and Welshpool. Pop. 983.

Montgomery, a city, capital of Alabama and of Montgomery county, on the left bank of the navigable Alabama River, 180 miles N. E. of Mobile. The principal buildings are the state capitol, in the rotunda of which the Confederate government was organized in 1861; the United States court-house, a state normal school, and many old-time residences with large and beautiful gardens. It has a large trade in cotton, lumber and coal, and manufactures of iron, furniture, cotton, oil, fertilizers, cars, cotton presses, etc. It is one of the largest jobbing centers in the South. Pop. 38,136.

Montgomery, ALEXANDER, a Scottish poet who flourished during the latter half of the sixteenth century, was born at Hazelhead Castle in Ayrshire. He seems to have experienced the fluctuating fortune of a courtier, at first in the service of the regent Morton, and afterwards in that of James VI, who granted him a pension. He died probably between 1605 and 1610. His principal poem, the allegory of the *Cherry and the Slave*, was first published in 1597. Many of his sonnets and miscellaneous pieces, some of which have considerable merit, were written much earlier and circulated in manuscript.

Montgomery, JAMES, the 'Christian Poet,' was born in 1771 at Irvine, Ayrshire, where his father was a Moravian preacher; died at Sheffield in 1854. He was educated at the Moravian school of Fulneck, near Leeds, and in 1792 became editor of the *Sheffield Iris*, a liberal dissenting paper, a post which he held till 1825. He was twice imprisoned (1795-96) for political offenses in his newspaper; and in 1797 he published his first volume of poems, under the name of *Prison Amusements.* In 1806 appeared his *Wanderer in Switzerland*, the first effort of his which gained the approbation of the public, though severely handled by the *Edinburgh Review.* It was followed in 1809 by the *West Indies;* in 1813 by *The World Before the Flood;* in 1819 by *Greenland*, a missionary poem; and in 1827 by *The Pelican Island*, perhaps his best work. He also wrote a number of hymns and other small pieces, which were published along with his longer poems.

Montgomery, RICHARD, soldier, was born in Swords, Ireland, in 1736. After serving with credit in the English army he was with Wolfe in 1759 at the taking of Quebec, and soon after resigned his commission and emigrated to America, where, in 1775, he was a delegate to the Continental Congress. Put in command of the northern department, he invaded Canada, captured Montreal, and was killed December 31, 1775, in a gallant attack on Quebec.

Montgomery, ROBERT (1807-55), a prolific versifier, is chiefly famous for having been mercilessly ridiculed by Lord Macaulay in the *Edinburgh Review.* He was born at Bath in 1807, and having taken orders in the Church of England, officiated at Percy Street chapel in London till his death in 1855, with an interval of four years as pastor of St. Jude's Episcopal chapel in Glasgow. His chief works, which amply justify Macaulay's strictures, though hardly their tone, are *The Omnipresence of the Deity* (1828); *Satan* (1830), whence his sobriquet of 'Satan Montgomery'; and *The Messiah.*

Month, a period of time derived from the motion of the moon; generally one of the 12 parts of the calendar year. The calendar months have from 28 to 31 days each, February having 28, April, June, September and November, 30, the rest 31. Month originally meant the time of one revolution of the moon, but as that may be determined in reference to several celestial objects there are several lunar periods known by distinctive names. Thus the *anomalistic month* is a revolution of the moon from perigee to perigee, average 27 days 13 hrs, 18 min. 37.4 sec.; the *sidereal month*, the interval between two successive conjunctions of the moon with the same fixed star, average 27 days 7 hrs. 43 min. 11.5 sec.; the *synodical*, or *proper lunar month*, the time that elapses between new moon and new moon, average 29 days 12 hrs. 44 min. 2.9 sec. The *solar month* is the twelfth part of one solar year, or 30 days 10 hrs. 29 min. 5 sec.

Monti (mon'tē), Vincenzo, an Italian poet, born in 1754; died in 1827. Educated at Faenza and Ferrara, in 1778 he went to Rome, where he wrote two tragedies—*Aristodemo* and *Galeotto Manfredi*—the splendid style of which was admired, although the plots were thought too tragic, and dramatic action was wanting. The murder of the French ambassador Basseville at Rome in 1793, gave occasion to his fiercely anti-republican poem *Bassvilliana*, in which he closely imitates Dante. Subsequently Napoleon appointed him secretary of the directory of the Cisalpine Republic in Milan, and finally historiographer of the kingdom of Italy. In this last-named capacity the poet published in Napoleon's honor his *Bardo della Selva Nera*, which, however, was received with disapprobation. Monti also published a third drama, *Caio Gracco*, and translated Homer's *Iliad*. He died in 1827 at Milan.

Monticello (mon-tē-sel'lō), the former residence of Thomas Jefferson, in Albemarle County, Virginia, on an elevation near Charlottesville. The great statesman is buried in a small private graveyard adjoining the road leading to the house.

Montilla (mon-tēl'yå), a town in Spain, province of Cordova; produces a fine variety of sherry, dry and rather bitter, variously known as Montilla and Amontillado. Pop. 13,603.

Montluçon (moṇ-lü-sōṇ), a town in France, department of Allier, on the Cher, 40 miles S. W. of Moulins, was a strong fortress during the middle ages. Portions of the walls and towers still remain. The castle, on a height above the river, dates from the fifteenth and sixteenth centuries. The manufactures are plate-glass, iron, cutlery, etc. Pop. 31,888.

Montmorency (mont-mō-ren'si), is a small river of Canada, which rises in Snow Lake, province of Quebec, flows south, and joins the St. Lawrence 8 miles below Quebec. Near its mouth are the Falls of Montmorency, which have a breadth of about 50 feet, and a perpendicular descent of 242 feet.

Montmorency (moṇ-mo-råṇ-si), the name of a noble family of France and the Netherlands, derived from the village of Montmorency, near Paris. One of its most distinguished members was Anne de Montmorency, first duke of Montmorency, Constable of France, and a distinguished general, born in 1492. He distinguished himself at the battle of Marignano in 1515, and for his valor at Bicocca, in 1522, was made marshal. He was taken prisoner along with Francis I at the battle of Pavia, in 1525, but was soon after ransomed. In 1536 he defeated Charles V. Francis I conferred on him the dignity of Constable in 1538. In 1551 he was made a duke. In 1557 he lost the battle of St. Quentin against Philip II of Spain, and was taken prisoner, but he regained his freedom by the Peace of Cateau-Cambrésis in 1559. Under Charles IX he joined the Duke of Guise and Marshal St. André in forming the famous triumvirate against Condé and the Huguenots. At the battle of Dreux, in 1562, Montmorency was made prisoner by the Huguenots; on the renewal of the civil war he gained a decisive victory over them at St. Denis, November 10, 1567, though the following day he died of his wounds. His grandson, Duke Henry II, born in 1595, was in his eighteenth year created Admiral of France. He fought successfully against the Huguenots and Spaniards, and was made a marshal; but having joined Gaston, duke of Orleans, in rebellion against the influence of Richelieu, he was taken prisoner at the battle of Castelnaudary, and executed at Toulouse as a traitor in 1632.

Montoro (mon-tō'ro), a town of Spain in Andalusia, 27 miles northeast of Cordova, is situated on the Guadalquivir, which is here crossed by a handsome bridge of the sixteenth century. Pop. 14,581.

Montpellier (moṇ-pel-yā), chief town of the department of Hérault, in France, is situated in a picturesque region, on the Lez, about 6 miles north of the Mediterranean and 80 miles W. N. W. of Marseilles. It is one of the

handsomest towns of the south of France. Among its noteworthy features are the Peyrou, a splendid promenade, on which is the so-called Château d'Eau, at the termination of a noble aqueduct; the citadel; the cathedral; the Palais-de-Justice; and the Porte de Peyrou, a triumphal arch of the Doric order. Montpellier is well equipped with educational and other institutions, and since the twelfth century has been famous for its school of medicine, said to have been founded by Arab physicians driven out of Spain. There are also 'faculties' of law, science, and literature, and a public library of 100,000 vols. The botanical garden, begun under Henry IV, is the oldest in France. Montpellier manufactures cottons, candles, soap, verdigris, chemicals, etc. It carries on an active trade, Cette serving as its harbor. Montpellier was a stronghold of the Huguenots, and suffered much in the religious wars. The edict of Montpellier (October 20, 1622) granted the free exercise of their religion to Protestants, and confirmed the Edict of Nantes. Pop. 65,983.

Montreal (mont-rē-ąl′), the largest city and the commercial capital of the Dominion of Canada, is situated on an island of the same name, formed by the mouths of the Ottawa, where, after a course of 750 miles, it debouches into the St. Lawrence. It is built upon the left or northern bank of the St. Lawrence, and is situated 180 miles S. W. of Quebec and 985 miles by river from the Atlantic Ocean. Behind the town rises the Mount Royal (Mont Real), from which it derives its name, and which is reserved as a public park. Situated at the junction of the inland and the ocean navigation, it has a harbor with three miles of wharfage accessible to steamers of the deepest draught. The canals, which have their outlet at this point, afford, with the waters they connect, uninterrupted navigation from the Strait of Belle Isle to Port Arthur, at the head of Lake Superior, a distance of 2260 miles. There are numerous lines of steamships which have their Canadian headquarters at Montreal. It is also the chief terminus of the Grand Trunk Railway, and the eastern terminus of the Canadian Pacific Railway. The city, which is one of the most attractive in Canada, contains many handsome public buildings; and is divided into distinctly marked English and French quarters. The chief public buildings are the court-house, the barracks, Bonsecours Market, custom-house, city hall, etc.; and the principal churches are St. Peter's Cathedral, constructed on the model of St. Peter's at Rome; the church of the Notre Dame (large enough to accommodate 10,000 persons); St. Patrick's, Christ Church Cathedral, St. Andrew's, St. Paul's, etc. McGill University, Presbyterian College, Wesleyan Theological College, Congregational College, Anglican Diocesan College, Bishop's College and University, Montreal School of Medicine and Surgery, Royal Victoria College (for women), are the leading Protestant educational institutions; those of the Roman Catholics comprise Laval University, St. Mary's College, Montreal College, Hochelaga Convent, etc. There are also a Society of Natural History, a museum and library, Mechanics Institute, Canadian Institute, Fraser Institute, etc. There are several libraries besides those of the above institutions, a natural history society with museum, an art association, musical societies, etc. The exports are chiefly the products of the country, such as grain, flour, cheese, lumber, etc., and there is a large trade in furs. The principal imports are cottons, woolens and silks, iron and hardware, and tea and sugar. Among the industrial establishments of Montreal are iron foundries, distilleries, breweries, sugar refineries, soap and candle works; and there are manufactures of cotton, silk,

boots and shoes, paper, carpets, tobacco, hardware, edge-tools, floor-cloth, carriages, etc. The Grand Trunk Railway, which connects the railways of Canada with those of the United States, crosses the St. Lawrence at Montreal by the stupendous (tubular) Victoria Bridge, 9184 feet in length, constructed in 1854-59. Montreal was founded, under the name of Villemarie, in 1642, on the site of the Algonquin village Hochelaga. It came into the hands of the English in 1760, when it was taken from the French by General Amherst. It was the seat of government of Lower Canada until 1849, in which year it was superseded by Quebec. The population in 1881 was 140,747, but since then several important municipalities have been annexed to the city, and the population had grown by 1911 to 470,480, of which the majority are Roman Catholics and of French origin.

Montreal, an island of Canada, in the river St. Lawrence, at the confluence of Ottawa River, 32 miles long, and 10½ broad, containing the city of Montreal. The surface is generally level (with the exception of Mount Royal), and the soil is for the most part fertile and well cultivated.

Montrose (mon-trōz′), a seaport town in Forfarshire, Scotland, is situated 60 miles N. E. of Edinburgh, at the mouth of the South Esk, which widens out into a shallow expanse behind the town, known as Montrose Basin. The river is crossed by a suspension bridge, and by a railway bridge. Between the town and the sea are extensive 'links.' Montrose is a well-built and fairly prosperous provincial town, with the usual public buildings and institutions, including two public libraries and one of the largest parish churches in Scotland. The principal employment is flax spinning, employing about 2000 hands. Shipbuilding is also carried on, and there are extensive saw-mills. The foreign trade, which is largely in timber, flax, etc., is chiefly with the Baltic and Canada. Montrose is also the center of a fishery district. Pop. 12,427.

Montrose, JAMES GRAHAM, MARQUIS OF (1612-1650), son of the fourth earl of Montrose, was born at Montrose in 1612, studied at St. Andrew's, and afterwards made a prolonged stay on the Continent. In 1637 Montrose joined the Covenanters in their resistance to Episcopacy, and was sent to crush the opposition to the popular cause which arose in and around Aberdeen. In 1639 he was one of the leaders who were appointed to confer with Charles I. after which he went over to the royalist side, was created a marquis, and made commander of the royal forces in Scotland. With an army partly composed of Irish and Highlanders he gained in rapid succession the battles of Tippermuir and Bridge of Dee 1644), Inverlochy, Auldearn, Alford and Kilsyth (1645). He afterwards went to

James Graham, Marquis of Montrose.

Austria, where he was made a marshal of the empire. Returning to Scotland in 1650, with an ill-organized force, he was defeated, captured and executed without trial, May 21, 1650.

Montserrat (mont-sér-rat′), one of the British West Indies, belonging to the Leeward group, lies about 30 miles N. W. of Antigua, and has an area of 32 sq. miles, mostly mountainous and barren. The principal exports are sugar and lime-juice. Its only town is Plymouth. Montserrat was discovered by Columbus in 1493, and was colonized by the British in 1632. Pop. 12,215, of whom it is estimated, not more than 200 are whites.

Monza (mon′za), a town in North Italy, 10 miles N. E of Milan, is situated on the Lambro, which is here crossed by three bridges. The town is of great antiquity. Pop. 32,000.

Moody (mö′di), DWIGHT LYMAN, evangelist, born at Northfield, Massachusetts, in 1837. He received little education, working on a farm until seventeen years old. Shortly after he joined a Congregational church. He went to Chicago in 1856, engaging in business and carrying on an active missionary work in association with Ira D. Sankey, an effective singer. They held religious services in many cities of the United States and Britain and had remarkable success. During the Civil war he was in the service of the Christian Commission and was

remarkably zealous in the work under its auspices. He established four schools, three at Northfield and one at Chicago. He wrote several theological works. Died at Northfield in 1899.

Moody, William H., statesman, was born at Newbury, Massachusetts, in 1853. He studied law, and in 1890-95 was district attorney for the eastern district of Massachusetts. He was a member of Congress 1895-1902; Secretary of the Navy 1902-04; Attorney General 1904-06, and was appointed a justice of the Supreme Court in December, 1906. He was compelled to resign in 1910 on account of illness.

Moon (mön), one of the secondary planets and the satellite of the earth, revolves round the latter in an elliptic (almost circular) orbit, in one sidereal month (see *Month*), at a mean distance of 238,818 miles, its greatest and least distances being 252,948 and 221,593 miles. Its mean diameter is 2159 miles; its surface is about $\frac{1}{13}$ (14,600,000 sq. miles) of that of the earth; the volume $\frac{1}{49}$; the mass about $\frac{1}{81}$; and the mean density a little more than ½. A mass weighing 1 lb. on the earth's surface would weigh about 2.64 ozs. on the moon's surface. For every revolution in its orbit the moon rotates once on its axis, so that the same portion of the surface is constantly turned towards the earth; but in virtue of an apparent oscillatory motion, known as libration (which see), about $\frac{4}{7}$ of the surface is presented at one time or another to terrestrial observers. If the moon's orbit were in the plane of the ecliptic, solar and lunar eclipses would occur monthly. The orbit is, however, inclined 5° 8′ 48″ to the ecliptic, so that the meridian altitude has a range of 57°, and it occults in course of time every star within 5° 24′ 30″ of the ecliptic. An eclipse of the moon occurs when it passes into the earth's shadow; when it prevents the sun being seen there is an eclipse of the sun. (See *Eclipse.*) The changes in the appearance of the moon, described by the words waxing and waning, are known as *phases.* The four chief phases, occurring at intervals of 90° in the lunar orbit, are New Moon, when it is between the earth and sun (*i. e.*, in conjunction with the sun), and so turns an unilluminated side to the earth; First Quarter, when one-half of the illuminated disc (*i. e.*, one quarter of the entire lunar surface) is visible; Full Moon, when the whole illuminated disc is presented to the earth; and Last Quarter, when once more only half of the disc is visibly illuminated. Between new moon and full moon the moon is said to *wax;* on the rest of its course it *wanes.* When more than a semicircle is visible it is said to be *gibbous*, when new or full it is said to be in its *syzygies.* On the visible portion of the lunar surface there is either no atmosphere or an exceedingly rare one, and no traces of organic life have been observed. As each portion is alternately in sunlight and in shade for a fortnight at a time, and as no atmosphere has been detected, it is conjectured that the lunar extremes of heat and cold far exceed the greatest terrestrial extremes. The surface of the moon is mainly occupied by mountainous masses, most of which are named after eminent scientific men. They sometimes appear detached as precipitous peaks, more frequently they form vast continuous ranges, but the most prevalent form is that of crater-mountains, sometimes 8 to 10 miles in diameter, and giving evident traces of volcanic action. Certain crater-like formations, which have still greater diameters, are generally spoken of as 'walled plains.' Larger still are the 'gray plains,' which were at one time taken for seas, before the absence of water from the lunar surface was demonstrated. Some of the mountains have been estimated to be over 24,000 feet in height, from observation of their shadows. Very peculiar ridges of comparatively small elevation extend for great distances, connecting different ranges or craters. The so-called 'rilles' or 'clefts' are huge straight furrows of great length (18 to 90 miles), now generally believed to be caused by cracks in a shrinking surface. There are also valleys of various sizes, and 'faults' or closed cracks, sometimes of considerable length. In reading descriptions of the visible peculiarities of the moon, it should be remembered that the highest telescopic power yet applied to that planet is only equivalent to bringing it within about 40 miles of the naked eye. The attraction of the sun for the earth and the moon tends to diminish their mutual action. When the moon is at new or full (in syzygies) the mutual attraction of the earth and moon is lessened by the sun more than usual, whereas it causes a small increase in the mutual action when the moon is in quadrature (when the line from the earth to the moon is at right angles to the line from the earth to the sun); again, the sun exerts a direct tangential acceleration on the moon which is positive (or towards the sun) when the moon is nearer the sun than the earth, and negative when the moon is further away than the earth; these two produce what is called the *moon's variation*, which, on the whole, is such that in each lunation the moon's velocity is greatest when

she is in syzygies and least when nearly in quadrature. For the influence of the moon on tides see *Tides*.

Moon, Mountains of the, the name given, on the authority of Ptolemy, who thus designates the range in which he places the sources of the Nile, to a chain of mountains long supposed to extend across the whole African continent at its broadest part. In reality no such range exists, though there are numerous different mountain systems in that extensive region.

Moonshiner, a term applied in the Southern and Western States to the makers of 'moonshine' or illicit whisky. The term came from the secrecy of their operations, frequently conducted at night, so as to evade the revenue officers.

Moonstone. See *Adularia*.

Moore (mōr), John, novelist and miscellaneous writer, was born at Stirling in 1730, and studied medicine at Glasgow University. He became house-surgeon to the British ambassador at Paris, afterwards practiced in Glasgow, where he received the degree of M.D.; and from 1772-1778 was traveling physician to the ninth Duke of Hamilton. He died at Richmond, in Surrey, in 1802. His best known work is his novel of *Zelucо* (1789), which seems to have exerted a considerable influence over Byron. Dr. Moore wrote two other novels and several volumes of observations made during his travels.

Moore, Sir John, a celebrated British general, the son of the preceding, was born at Glasgow in 1761; killed at Corunna in 1809. Having obtained an ensign's commission in the 51st Regiment, he served at Minorca, in the American war, as brigadier-general in the West Indies (1795), in Ireland during the rebellion of 1798, in Holla[illegible]t in 1799, and in Egypt in 1801, where he was severely wounded in the battle which cost Sir Ralph Abercrombie his life. Moore was now regarded as the greatest living British general, and in 1805 he was knighted. In 1808 he was appointed commander-in-chief of the British army in Portugal to operate against Napoleon. He advanced to Salamanca in spite of the gravest difficulties, but was finally compelled to retreat to Corunna, a distance of 200 miles, in face of a superior force. This he accomplished in a masterly manner: but the absence of the fleet to receive his army forced him to a battle against Marshal Soult, in which Moore fell, mortally wounded, in the hour of victory (January 16, 1809).

Moore, Thomas, the national poet of Ireland, was born in 1779 in Dublin, where his father was a grocer; died near Devizes in 1852. From Trinity College, Dublin, he passed in 1799 to the Middle Temple in London, nominally to study law; but he almost immediately formed a connection with the fashionable and literary society of which he was so long an ornament, and in 1800 he was permitted to dedicate his Translation of the *Odes of Anacreon* to the Prince of Wales. His next venture, the *Poetical Works of the late Thomas Little*, though partly written in a licentious vein, which he afterwards regretted, increased his reputation; and in 1803 Lord Moira obtained for him the office of registrar of the admiralty court at Bermuda. Moore went out, but almost immediately appointed a deputy, and returned to England via the United States and Canada, and in 1806 published his *Odes and Epistles*. The severe castigation of this work

Thomas Moore.

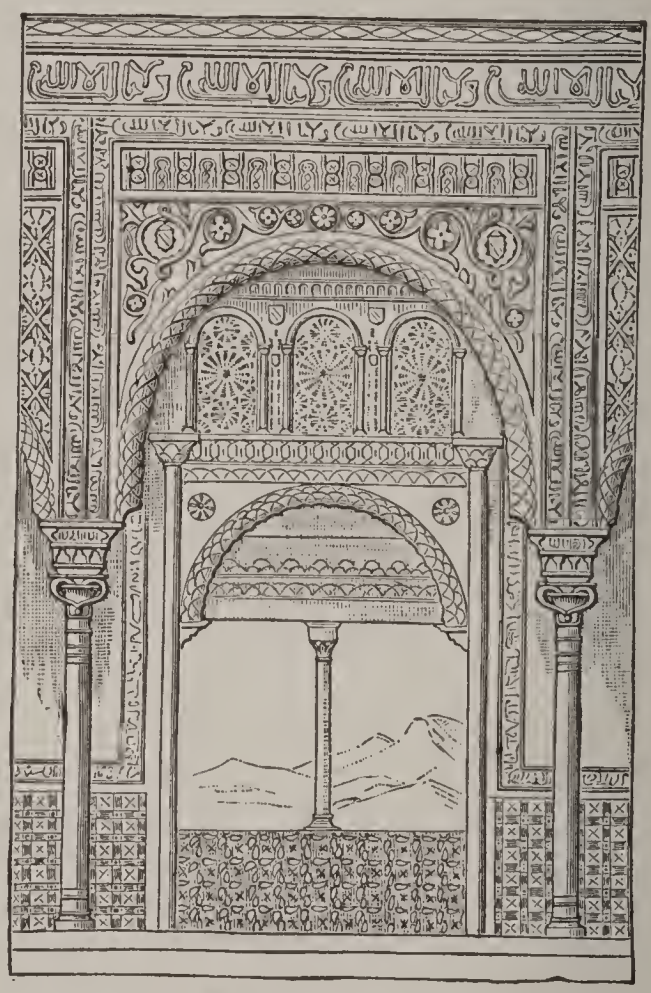
by Francis Jeffrey in the *Edinburgh Review* led to a hostile meeting between the critic and the author, but the duel was interrupted by the authorities before a shot was fired. An allusion in *English Bards and Scotch Reviewers*, by Lord Byron, to a malicious report that the pistols on this occasion had been loaded only with powder, also produced a challenge from Moore, but matters were afterwards peaceably arranged. Both Jeffrey and Byron were subsequently among the warmest friends of Moore. In 1807 Moore agreed to write words for a num-

ber of Irish national airs, arranged by Sir John Stevenson. In these *Irish Melodies*, which were not finished till 1834, he found the work for which his genius was peculiarly fitted, and it is on them that his poetic reputation will mainly rest. With *The Intereepted Letters;* or, the *Twopenny Post Bag*, by Thomas Brown the Younger (1812), Moore entered upon the field of political and social satire, in which his wit and playfulness found good account; other works of this kind are the *Fudge Family in Paris* (1818); *Rhymes on the Road* (1823); *Memoirs of Captain Rock* (1824), etc. His most ambitious work, the gorgeous Eastern romance of *Lalla Rookh*, was published in 1817, and brought its author £3000, but two years later he was compelled to retire to France in order to avoid arrest for a debt of £6000, afterwards reduced to about £1000, for which the dishonesty of his deputy at Bermuda had rendered him liable. He returned to England in 1822, with the poem, *The Loves of the Angels*, and ultimately succeeded in paying the debt by his literary exertions. *The Life of Sheridan* was produced in 1825, and *The Epicuream*, a prose romance, in 1827. Next came the *Life of Lord Byron*, for which he received nearly £5000, and the *Life of Lord Edward Fitzgerald*. His remaining works include *The Summer Fête*, a poem; *Travels of an Irish Gentleman in Search of a Religion*, a serious apology for Roman Catholicism, and (in 1834) a *History of Ireland* for *Lardner's Cyclopædia*, an uncongenial task-work, never finished. He wrote little after this. From 1835 he had enjoyed a pension of £300, and in 1850 his wife, whom he had married in 1811, received an additional annual grant of £100. Moore's *Journal and Correspondence* was published by his friend Lord John Russell in 1852-56.

Moor-fowl. See *Grouse.*

Moor-hen, or GALLINULE. See *Gallinule.*

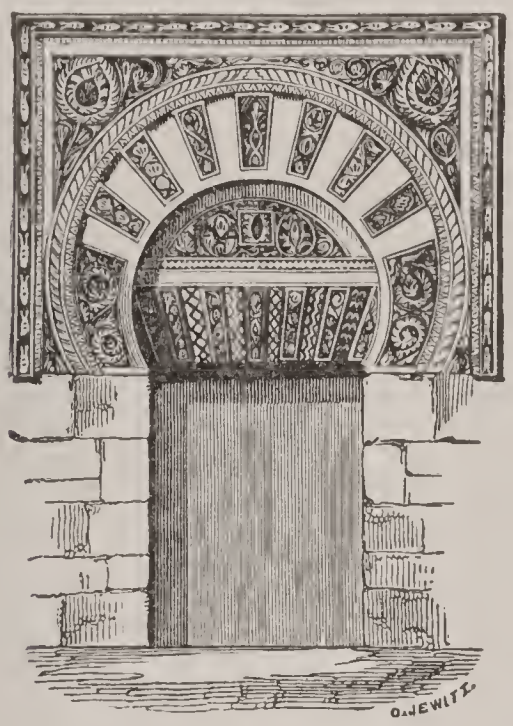
Moorish Architecture (mör'ish), is that form of Saracenic architecture which was developed by the Moslem conquerors of Spain in building their mosques and palaces. Its main characteristics are—the horseshoe arch, varied by the trefoil, cinquefoil, and other forms of arch; profuse decoration of interiors by elaborately designed arabesques in low relief, enriched by colors and gilding, as well as by geometrical designs worked in mosaics of glazed tiles; the slenderness of the columns in proportion to the supported weight; and the curious stalactitic pendentives by which the transition is effected from the rectangular ground plan to the arched or domed roof. An important specimen of this style is the mosque of Cordova, now the cathedral, which was begun by Caliph Abd-el-Rahman (786 A.D.), completed by his son, and subsequently much altered. It consisted originally of eleven aisles, and the eight aisles which were afterwards added (976-1001) made it one of the largest buildings in Europe, but the effect of its great extent, 420 feet by 375, is marred by its height, which is only about 30 feet to the roof. Another notable specimen of



Moorish Decoration—Court of the Alhambra.

Moorish architecture is the Giralda or cathedral tower of Seville. It is supposed to have been built by Abú Yusúf Yakúb (1171 A.D.) as a tower of victory, and was used by the Moslems as a minaret or mueddin-tower. The base is a square of about 50 feet, from which the tower rises straight for 185 feet, and is now crowned by a belfry added in the sixteenth century. The lower part of this tower is nearly plain, but from about one-third of its height upwards it is enriched by sunk panels filled with ornamentation in relief, which give lightness and grace to the structure without affecting its general massiveness. The most

characteristic Moorish palace in existence is the Alhambra in Granada, an immense structure of simple and rather forbidding exterior, but within gorgeous almost be-



Moorish Doorway, Cordova.

yond description. (See *Alhambra.*) In this palace are found to perfection the distinctive characteristics of Moorish architecture.

Moors (mörz), a Mohammedan, Arabic-speaking race of mixed descent, forming part of the population of Barbary, and deriving their name from the Mauri, the ancient inhabitants of Mauretania, whose pure lineal descendants are, however, the Amazirgh, a branch of the Berbers. The modern Moors have sprung from a union of the ancient inhabitants of this region with their Arab conquerors, who appeared in the seventh century. As the Mohammedan conquerors of the Visigoths in Spain (711-713) came from North Africa, the name Moor was also applied to them by Spanish chroniclers, and in that connection is synonymous with *Arab* and *Saracen.* These Moors pushed northwards into France, until their repulse by Charles Martel at the great battle of Tours in 732, after which they practically restricted themselves to Spain south of the Ebro and the Sierra Guadarrama. Here, for centuries, art, science, literature and chivalry flourished among them, while the rest of Europe was still sunk in the gloom of the dark ages. Their internal dissensions and divisions, however, weakened them in face of the new Christian kingdoms of Aragon and Castile, and before the close of the thirteenth century their possessions were limited to the kingdom of Granada. This, too, was finally subdued by Ferdinand the Catholic in 1492; and while great numbers of the Moors emigrated to Africa, the remainder, under the name of *Moriscos*, assuming in great part a semblance of Christianity, submitted to the Spaniards. The cruel proselytizing zeal of Philip II, however, excited a sanguinary insurrection among the Moors in 1568-70, which was followed by the banishing of many thousands. In 1610 Philip II expelled the remainder, the most ingenious and industrious of his subjects. Between 1492 and 1610 about 3,000,000 Moriscos are estimated to have left Spain. The expulsion of the Moors was one of the chief causes of the decadence of Spain; for both agriculture and industries fell into decay after their departure. The expelled Moors, settling in the north of Africa, finally developed into the piratical states of Barbary, whose depredations were a source of irritation to the civilized powers even till well into the last century.

Moorshedabad. See *Murshidabad.*

Mooruk (mö'ruk; *Casuarius Bennettii*), a variety of cassowary, inhabiting the island of New Britain, where it is made a great pet with the natives. It is very swift of foot.

Moorva. Same as *Bowstring Hemp.*

Moose. See *Elk.*

Moose Jaw, a town of Saskatchewan province of Canada, 398 miles w. of Winnipeg. Pop. 13,824.

Moquis, (mō'kez), the name of an Indian people, of semicivilized culture, living in Northern Arizona. Coronada's expedition of 1540 was to the seven towns of the Moquis. They were subdued by the Spaniards, but gained their independence by a revolt in 1680. They cultivate the soil and are kind hearted and hospitable. Their houses are built of stone, set in mortar, and on top of almost inaccessible hills or mesas.

Mora (mō'ra), a game known to the ancients, and still in vogue in the south of Europe. The two players simultaneously present each a hand, with some of the fingers extended, at the same moment endeavoring to guess the aggregate number of fingers so extended. An accurate guess counts one; five is game.

Moradabad (mō-rud-ä-bäd'), a town of India, in Rohilkhand, in the Northwest Provinces, 75 miles east of Meerut, on the Ramganga. It is noted for its metal work, and is a center of local trade. It was founded by the Ro-

hilla Afghans, and has a Protestant church and American mission, and a cantonment. Pop. 75,128.

Moraine. See *Glaciers.*

Morales (mo-rä'lās), LUIS DE, a Spanish painter, surnamed *El Divino*, probably because he painted sacred subjects almost exclusively, was born at Badajoz in 1509; died there in 1586. Invited to the court of Philip II, he lived for a short time at Madrid, and Philip latterly granted him a pension. His *Mater Dolorosa*, at Madrid, is considered his masterpiece. He is praised for his skilful gradation of tints, and his power of giving expression to resigned sorrow.

Morality (mu-ral'i-ti), or MORAL PLAY, a sort of allegorical play, embodying moral discourses in praise of virtue and condemnation of vice, the dialogue being carried on by personifications of virtues and abstract qualities. The Devil of the earlier Miracle Plays, which were never entirely superseded by the Moralities, became the Vice of the latter; sometimes he appears in person, with the Vice as his attendant. Moralities first appeared in England about the beginning of the reign of Henry VI, and lingered until the reign of Elizabeth (about 1600). For a time they maintained their interest by reference to current topics, but finally gave way to the regular drama.

Moral Philosophy. See *Ethics.*

Morat (mo-rä; German, *Murten*), a town (2263 inhabitants) in the Swiss canton of Freiburg, on the Lake of Morat, 16 miles west of Bern. Here, on the 22d of June, 1476, the Swiss Confederacy, aided by some allies from the Rhenish cities, routed with great slaughter Charles the Bold, duke of Burgundy.

Moratin (mo-ra-tēn'), LEANDRO FERNANDEZ, a Spanish writer of comedies, born in 1760 at Madrid; died at Paris in 1828. Moratin was the author of odes, sonnets, epistles, and other poems, as well as of five successful comedies, composed on the regular French models. He also wrote the valuable *Origenes del Teatro Español.*

Morava (mō'rà-va), the chief river of Moravia, a tributary of the Danube, which it joins after a course of about 200 miles.

Moravia (mō-rā'vi-a; German, *Mähren*), a northwestern province or crownland of the Austrian Empire; area 8578 sq. miles. It is enclosed by the Carpathians and other mountains, and belongs almost entirely to the basin of the March or Morava (from which it takes its name), a tributary of the Danube. The minerals are of considerable importance, and include iron, coal, graphite and slate. Nearly 97 per cent. of the soil is productive, the chief crops being rye, oats, barley, potatoes, beet-root and flax. Fruit is very abundant, and large quantities of wine are annually produced. Sheep in great numbers, and cattle, are reared. Moravia is the most important manufacturing province of the empire, after Austria proper and Bohemia. Its woolen industries are of world-wide fame, and linen and cotton, beet-root sugar, iron and steel goods, machinery, beer and spirits are also turned out in large quantities. The chief towns are Brünn, Olmütz, Znaim and Iglau. In 1029 Moravia was united to the kingdom of Bohemia, with which it passed to Austria in 1526. Moravia possesses a provincial diet with 100 members, and sends 36 deputies to the imperial diets. About 70 per cent. of the inhabitants are Slavonians (Czechs) and nearly 30 per cent. Germans; total pop. 2,435,081.

Moravian Brethren, also called UNITED BRETHREN, HERRNHUTER, and officially UNITAS FRATRUM (Unity of Brethren), a Protestant sect or church which originally sprang up in Bohemia after the death of John Huss. (See *Bohemian Brethren.*) After the sanguinary religious wars which prevailed in Bohemia until 1627 they were everywhere almost annihilated. Their doctrines were still, however, secretly cherished in Moravia, and in 1722 a colony emigrated thence, and were invited by the Lutheran Count Zinzendorf to settle on his estate near Berthelsdorf, in Saxony, where they built the town of Herrnhut, still the headquarters of the church. The doctrines of the brethren had hitherto been more in harmony with the Calvinistic than with the Lutheran form of Protestantism, but under the influence of Count Zinzendorf, who himself became a bishop, they attached themselves to the Lutheran Church. From Herrnhut the Moravian Church extended to other points in Germany, and to England and the United States (1735). These three countries form self-supporting home provinces of the Unitas, to which in 1889 the West Indies, hitherto a mission field, was added as a fourth. Each has its synod and elders' conference, subject to the General Synod, which meets at Herrnhut once every 7-12 years. The Moravian Brethren have always distinguished themselves as missionaries, and maintain stations in North and Central America, South

Africa, Australia and Tibet. The Moravian Brethren are distinguished for the Puritanical simplicity of their life and manners, and for their earnest, if somewhat narrow and austere, piety. The practice of living in exclusive communities or villages still obtains in Germany. Within these communities the unmarried men sometimes live in common in a building assigned for that end, the unmarried women in another, widows in a third. Moravian schools deservedly enjoy a high reputation even among those who are not members of the community. The clergy are divided into bishops, priests, and deacons. The Moravian church is estimated to number about 115,000 adherents. In the United States there are about 18,000 members.

Mora-wood. Same as *Fustic.*

Moray. See *Elgin.*

Moray Firth (mur'ā), the great gulf on the northeast coast of Scotland, containing at its widest extent the sea between Duncansby Head in Caithness-shire and Kinnaird Head in Aberdeenshire, a distance of 78 miles; but in a restricted sense that portion which lies between Tarbat Ness and Lossiemouth (21 miles), and which extends into the Cromarty and Beauly Firths.

Moray, or MURRAY, JAMES STUART, EARL OF, half-brother of Mary Queen of Scots, natural son of James V of Scotland and Margaret Erskine, born about 1533. In 1558 he joined the Lords of the Congregation, and was soon recognized as the head of the reformers' party. On Mary's return from France Moray became her favored adviser, but her marriage with Darnley and subsequent events caused a breach between them which constantly widened. On the deposition of Mary he was appointed regent, defeated her forces at Langside on her escape from Lochleven (1568), and appeared as evidence against her at her trial in England. He consequently incurred the bitter hatred of the queen's party, but earned from the people the title of 'Good Regent.' In 1570 he was shot in the streets of Linlithgow by Hamilton of Bothwellhaugh, who was actuated by private grievances.

Morayshire. See *Elgin.*

Morbihan (mor-bi-äṇ), a northwestern department of France, on the Bay of Biscay; area, 2624 square miles, of which less than half is arable. The northern part is hilly, but the rest is low and level, especially along the coast, which is lined by several fertile islands and is deeply indented. The plains on the coast are fertile, and the ordinary fruits are abundant; cider, butter and honey are among the chief products. The fisheries are important, and the general trade, favored by the harbors on the coast and by canals, is considerable. Iron is the chief mineral. The chief town is Vannes. Pop. 573,152.

Mordant (mor'dant), a substance frequently employed to fix the colors in dyeing. See *Dycing.*

Mordaunt (mor'dânt), CHARLES. See *Peterborough, Earl of.*

Mordvins (mord'vinz), a race of people inhabiting European Russia, and belonging to the Bulgaric or Volgaic group of the Finnish family of peoples. They are found chiefly in the governments of Penza, Simbirsk, Saratov, Samara, Nishegorod and Tamboy. Their chief sources of livelihood are cattle-rearing, hunting, fishing and bee-keeping. Their numbers are estimated at 480,000.

More (mōr), HANNAH, popular writer on moral and religious subjects, born at Clifton, Bristol, about 1745; died there in 1833. Her talents early made her acquainted with Johnson, Burke, Garrick, and other literary men, and her plays, *The Inflexible Captive, Percy* and the *Fatal Captive,* were fairly successful. After the production of the last, in 1779, she devoted herself to the composition of works having a moral and religious tendency, the diffusion of tracts, and philanthropic labors. Her success was astonishing, the profits of her works during her lifetime exceeding £30,000. Her *Strictures on the Modern System of Female Education, Cœlebs in Search of a Wife, Practical Piety* and *Moral Sketches,* are among her best-known books.

More, HENRY, a divine and philosopher, born at Grantham, in Lincolnshire, in 1614; died at Cambridge in 1687. He studied at Eton, and was graduated at Christ College, Cambridge, in 1639. In the following year he published his *Psycho-Zoia,* or the *First Part of the Song of the Soul,* a blending of Christian, Cabbalist and Platonic doctrines. In 1675 he accepted a prebend in the cathedral of Gloucester, which it is supposed he took only to resign it to his friend Dr. Fowler. He also gave up his rectory of Ingoldsby, in Lincolnshire. In 1661 he became a fellow of the Royal Society. His writings are characterized by the belief that Plato had received through Pythagoras a knowledge of Hebrew theology and was also favored directly with supernatural communications. The most admired are his *Enchiridion*

Ethicum (1669) and *Divine Dialogues Concerning the Attributes and Providence of God.*

More, Sir Thomas, a chancellor of England, only son of Sir John More, a judge of the Court of King's bench; born in London in 1480, beheaded in 1535. A portion of his youth was spent in the family of Cardinal Morton, archbishop of Canterbury, and chancellor; and he was then sent to Oxford, and afterwards entered at Lincoln's Inn. He had already formed an intimate and lasting friendship with Erasmus. About 1502 he became a member of parliament, and immediately made for himself a place in history by upholding the privileges of the House of Commons to treat all questions of supply as their own exclusive business. On the accession of Henry VIII he was made under-sheriff of London. In 1514 he was envoy to the Low Countries, soon after was made a privy-councilor, and in 1521 was knighted. He appears to have ere this time considerably enriched himself by practice, and with his wife, a daughter of a gentleman of Essex named Colt, he kept up a noble hospitality. In 1523 he became speaker of the House of Commons, and in 1529 succeeded Wolsey in the chancellorship. When Henry began his attacks on the papal supremacy More at once took up the position which his conscience dictated as a supporter of the old system. Henry marked him out for vengeance as an opponent of his matrimonial views, and More endeavored to shield himself by retiring from office. He was requested to take the oath to maintain the lawfulness of the marriage with Anne Boleyn. His refusal to do so led to his committal to the Tower, trial for misprision of treason, and execution. His chief work is the *Utopia* (in Latin), a philosophical romance describing an ideal commonwealth, which evinces an enlightenment of sentiment far beyond that of his time.

More'a. See *Greece.*

Moreau (mō-rō), Jean Victor, a French general, born at Morlaix, in Bretagne, in 1763; died in 1813. Bred to the law, he early displayed a predilection for the military profession, and in 1789 he joined the army of the north at the head of a battalion of volunteers. He so distinguished himself that he was named commander-in-chief of the army of the Rhine and Moselle in 1796, destined to threaten Vienna simultaneously with the invasion of Italy by Bonaparte. His conduct of the operations, and especially of the retreat to the French frontier in the face of a superior army, showed exceptional strategic power. In 1799 he was in command of the army of Italy, and next year had the command of the armies of the Danube and the Rhine. The passage of these rivers, and a series of victories, ending with Hohenlinden, induced the Austrians to ask for peace. Being found guilty of participation in the conspiracy of Pichegru and Cadoudal against Napoleon (1804), he had to go into exile, and purchased an estate in Pennsylvania, where he resided some years. He was subsequently induced to aid in the direction of the allies' armies against his own country, but was mortally wounded in the battle before Dresden in 1813, and died a few days later.

Morecambe Bay (mōr'kam), a bay on the northwest coast of England, running into Lancashire and Westmoreland. It is very shallow, and proposals to reclaim the greater portion of it have been frequently made.

Moreen (mu-rēn'), a woolen or woolen and cotton fabric made in imitation of moiré (that is, having a watered appearance), and used for curtains, dresses, etc.

Morel (mor'el), a genus of edible mushrooms (*Morchella*), applied specifically to *Morchella esculenta.* This is plentiful in some parts of Britain, and common in Germany. It is much used to flavor gravies, and is sometimes employed instead of the common mushroom to make ketchup.

Morelia (mō-rā'lē-a), a town of Mexico, capital of the State of Michoacan, in a valley 6400 feet above sea level. It enjoys a mild and salubrious climate, is well built, has a cathedral, several elegant churches, and fine promenades. It has cotton and tobacco factories. Pop. 37,278.

Morello (mu-rel'ō), a fine variety of cherry with fruit that becomes almost black if allowed to hang.

Morelos (mō-rā'lōs), an inland State of Mexico, south of Mexico, containing the volcano of Popocatepetl; area, 2773 square miles; pop. 161,697.

Moresques, in painting. See *Arabesques.*

Moreton Bay (mōr'tun), the port of Brisbane, the capital of Queensland. It is about 40 miles long N. and S. by 17 miles wide, and receives the waters of the Brisbane and other rivers. The anchorage is good.

Moreton Bay Chestnut (*Castanospermum australe*), a leguminous tree of Australia, with pea-like yellow flowers and edible seeds somewhat resembling chestnuts.

Moreton Bay Pine. See *Araucaria.*

Moreto y Cabana (mo-rā'tō ē kȧ-bȧn'yȧ), AGUSTIN, a Spanish dramatist, born at Madrid in 1618. He studied at Alcala (1634-39), entered the household of the Cardinal Archbishop at Toledo, took holy orders, ultimately withdrew from the world to an ascetic religious brotherhood, and died in 1669. He was a friend and largely an imitator of Lope de Vega and Calderon, but by his developments on the humorous side is sometimes regarded as the founder of true comedy in Spain. He left more than 200 works, one of which, *El Desden con el Desden* ('Scorn for Scorn'), is classed among the four leading products of the Spanish drama.

Morgan (mōr'gan), DANIEL, Revolutionary soldier, born in New Jersey in 1736, and served with distinction in the war of the Revolution. He was prominent in Arnold's expedition against Quebec, was in command of the riflemen at the battle of Saratoga in 1777, and was in command at the battle of the Cowpens in 1781, where he signally defeated the British under Tarleton. Congress voted him a gold medal for his gallantry. He died in 1802.

Morgan, JOHN HUNT, Confederate soldier, born at Huntsville, Alabama, in 1825. He took command of a troop of cavalry in 1861, made several daring raids through Kentucky, and in 1863 crossed the Ohio with about 4000 men, and made a dashing ride through Indiana and Ohio, destroying bridges, railroads, etc. He was pursued and captured, but escaped from prison and continued his career till killed in a battle at Greenville, Tennessee, September 4, 1864.

Morgan, JOHN PIERPONT, financier, was born at Hartford, Connecticut, in 1837. He became connected in 1857 with the banking firm of Duncan, Sherman & Co., and in 1871 was made a partner of the firm of Drexel, Morgan & Co., which afterwards became J. Pierpont Morgan & Co. In this capacity he entered into wide financial operations as a railroad and industrial organizer, and in 1901 created the largest business concern in existence, the United States Steel Corporation, with a capital of $1,100,000,000 and working funds of $200,000,000. Since then he has continued in broad and bold operations and has become the leading figure in American finance.

Morgan, LEWIS HENRY, archæologist, born at Aurora, New York, in 1818; died in 1881. He became a lawyer at Rochester, and was elected to the State Assembly in 1861 and to the Senate in 1868. He became one of the founders of the modern school of ethnological science, which bases its work on the study and comparison of primitive civilizations. His reputation rests on his able *League of the Iroquois* and his *Systems of Consanguinity and Affinity.* He also wrote *The American Beaver.*

Morgan, SYDNEY, LADY, authoress and brilliant society figure, born somewhere between 1770 and 1786, the actual date having been whimsically concealed by her. Her father was an actor on the Dublin stage, named MacOwen or Owenson. She early attracted attention by her musical and other accomplishments. In 1797 she published a volume of poems, followed by a collection of Irish songs, and two novels, entitled *St. Clair,* and the *Novice of St. Dominick.* In 1806 appeared her *Wild Irish Girl,* a novel which passed through seven editions in two years. In 1811 she married Sir Charles Morgan, an eminent physician. Among her other writings are the novels of *O'Donnell, Florence Macarthy,* and the *O'Briens and the O'Flahertys;* the *Life and Times of Salvator Rosa; Woman and Her Master;* and *Passages from My Autobiography.* She died in 1859.

Morgan City, a city of St. Mary's County, Louisiana, on the Atchafalaya Bayou, 75 miles w. s. w. of New Orleans. It has sugar, fish and oyster interests. Pop. 5477.

Morganatic Marriage (mor-ga-nat'ik), in some European countries, one in which it is stipulated that the wife (who is inferior in birth to the husband) and her children shall not enjoy the privileges of his rank nor inherit his possessions. The common law of Germany permits such marriages only to the high nobility.

Morgarten (mōr-gär'tn), a place in Switzerland, Canton Zug, where a small body of Swiss in 1315 totally defeated a large force of the Austrians.

Morgantown, a city, capital of Monongalia Co., West Virginia. It lies on the Monongahela River, 60 miles s. of Pittsburgh, has large glass works and other industries, and is the seat of the West Virginia University. Pop. 9150.

Morghen (mōr'gen), RAPHAEL SANZIO, an Italian engraver, born in 1758. He studied at Rome under Volpato, whom he assisted in engraving the famous pictures by Raphael in the Vatican. He settled in Florence in 1793 as professor of engraving in the Academy

of Arts, and died in 1833. His works number about 200 in all, many of them of large size. Among the chief are the engraving of Leonardo da Vinci's *Last Supper;* the *Transfiguration*, after Raphael; a *Magdalen*, after Murillo; a *Head of the Saviour*, after da Vinci; the *Car of Aurora*, after Guido; *The Hours*, after Poussin; the *Prize of Diana*, after Domenichino; the *Monument of Clement XIII*, after Canova; *Theseus Vanquishing the Minotaur;* portraits of Dante, Petrarca, Ariosto, Tasso, etc.

Morgue (morg), La, in Paris, a place behind Notre Dame, where the bodies of unknown persons who have perished by accident, murder, or suicide are exposed, that they may be recognized by their friends. From this all such places in English-speaking countries are given the name of morgue.

Morier (mō'ri-ėr), James, an English novelist, born in 1780. He accompanied Lord Elgin as private secretary on his embassy to Constantinople, made the campaign of Egypt in the suite of the grand vizier, was taken prisoner by the French, and after his release became from 1810 to 1816 British envoy at the court of Persia. He died at Brighton in 1849. In 1812 and in 1818 he published accounts of two *Journeys Through Persia to Constantinople*, but he was best known by his *Adventures of Hajji Baba of Ispahan* (1824); *Adventures of Hajji Baba in England* (1828); *Zohrab the Hostage* (1832); *Ayesha, the Maid of Kars* (1834).

Morinda (mor-in'da), a genus of Asiatic trees of the cinchona family, the bark or roots of which yield red and yellow dyes.

Moringaceæ (mor-in-gā'se-ē), a nat. order of plants, closely akin to Leguminosæ and containing only the genus *Moringa*. See *Ben*.

Morion of the time of Queen Elizabeth.

Morion (mō'ri-un), a helmet of iron, steel, or brass, in general conformation resembling a hat, often having a crest or comb over the top, being without beaver or visor, introduced into Britain either from France or Spain about the beginning of the sixteenth century.

Morisco. See *Moors*.

Morisonians. See *Evangelieal Union*.

Morlaix (mor'lā), a seaport of France, department of Finistère, 34 miles northeast of Brest, on a small estuary formed by the junction of two streams, which united to form the Dossen; with a government tobacco factory, and a good trade. Pop. 13,875.

Morland (mor'land), George, painter, born in London in 1763; died in 1804. He married a sister of James Ward, the animal painter, and William Ward, the engraver, and lived a very dissipated life, many of his best pictures being painted within the rules of a debtor's prison. His work deals with rustic and homely life, and the best of it is now highly prized by connoisseurs. He had extraordinary popularity during his lifetime, and about 250 of his pictures are said to have been engraved. The *Interior of a Stable*, now in the National Gallery, is perhaps his masterpiece.

Morley (mor'li), Henry, author, born in London in 1822; educated at King's College, of which he was an honorary fellow; practiced medicine in Shropshire and teaching in Liverpool; and went to London as a journalist in 1851. From 1857 to 1865 he was English lecturer at King's College; after the latter year he was professor of English language and literature at University College, London, and also at Queen's College. In 1882 he became principal of University Hall. His more important works are connected with the history of English literature, and include *First Sketch of English Literature, English Writers, English Literature in the Reign of Victoria*, etc. He edited various series of literary works, besides writing many biographies, two volumes of *Fairy Tales*, etc. He died in 1894.

Morley, John, author and statesman, born at Blackburn, Lancashire, in 1838; educated at Cheltenham and at Lincoln College, Oxford, where he graduated B.A. in 1859. He was called to the bar in 1873; was for some time editor of the *Literary Gazette*, conducted the *Fortnightly Review* from 1867 to 1882, and edited the *Pall Mall Gazette* for three years (1880-83), and *Macmillan's Magazine* for two years (1883-85). He was editor also of the *English Men of Letters* series, to which he contributed the volume on Burke. He is author of a *Life of Cobden*, an *Essay on Wordsworth*, *Walpole* in the English Statesman series, etc. He was an unsuccessful candidate for the representation of Blackburn in 1869, and Westminster in 1880, but succeeded at Newcastle-on-Tyne in 1883, and represented Montrose Boroughs after 1896. He was ever one of Gladstone's chief supporters in his Home Rule scheme, and was chief secretary for Ireland in 1886 and 1892-05. His latest

works are *Cromwell*, 1900, and *Life of Gladstone*, 1903.

Mormons (mor'monz), a religious sect founded in 1830 by Joseph Smith, a native of the United States. The distinguishing peculiarities of the sect are—the belief in a continual divine revelation through the inspired medium of the prophet at the head of their church, and a complete hierarchical organization. To these was afterwards added the practice of polygamy, which brought the sect into great disrepute. The supreme power, spiritual and temporal, rests with the president or prophet (elected by the whole body of the church), who alone works miracles and receives revelations. The Mormons accept both the Bible and the Book of Mormon as divine revelations, but hold them equally subject to the explanation and correction of the prophet. The latter book (which those outside the church now generally believe to have been written by Smith himself) comprises a history of America from the first settlement of the continent after the destruction of the tower of Babel up to the end of the fourth century of our era, at which time flourished the legendary prophet Mormon, its reputed author. It was said to have been written on gold plates, and concealed until its hiding place was revealed to Smith by an angel. The book has been identified by some with *The Manuscript Found*, a romance by Samuel Spaulding, a Congregational minister (1761-1816), probably owing to the important part played in the novel by Mormon and his son Moroni; but it differs greatly from the Spaulding manuscript now in the archives of Oberlin College, and the theory has been discredited. The Book of Mormon declared Smith to be God's "prophet." The doctrine of the Mormons is a mixture of polytheism and millenarianism, and the most distinctive feature has long been polygamy, which, though originally condemned in the Book of Mormon, was introduced under a theory of 'spiritual wives,' and a mysterious system of unrestricted marriage called 'sealing.' The Mormons first appeared at Manchester, New York, whence they were compelled by the persevering hostility of their neighbors to flee, first to Kirkland, in Ohio, (1831); then to Nauvoo, the 'City of Beauty,' in Illinois (1838), and finally to the Salt Lake region in Utah (1847). In 1844 the founder, Joseph Smith, was shot by a mob in Carthage prison, and in 1845 the charter that had been given to Nauvoo was repealed. Utah was chosen as the future home. The advance made by Mormonism seems to have been due far more to the abilities of Brigham Young, the successor of Smith, than to the founder himself. Large tracts of land at Salt Lake were brought under cultivation, an emigration fund was established, and a skilful system of propagandism set on foot, by which large numbers of converts were brought from Europe, especially from Great Britain. A State was organized under the name of Deseret. Congress refused to recognize it, but erected Utah into a Territory, and Brigham Young was appointed governor of it. He was soon removed by the United States authorities, but after a time the Mormons were left very much to themselves. In 1870 Congress passed a bill to compel them to renounce polygamy, or quit the United States. A prosecution was instituted against Brigham Young, who was sentenced to fine and imprisonment. In 1877 Young died and was succeeded by John Taylor, an Englishman. Later presidents have been Wilford Woodruff, Lorenzo Snow and Joseph F. Smith. The United States government passed several bills for the abolition of polygamy, and in 1890 the church surrendered. *The Reorganized Church of Jesus Christ of Latter-Day Saints*, sometimes called Nonpolygamous Mormons, claim to be true to the doctrines proclaimed by Joseph Smith, insisting that Young's followers were led from the truth, and deny that Young's revelation concerning polygamy was genuine.

Morning-star, the planet Venus when it rises before the sun.

Morny (mor-nē), Charles Auguste Louis Joseph, Comte de, French politician, said to have been a half-brother of Louis Napoleon, born at Paris in 1811; died in 1865. He was for a time in the army, then tried commercial speculation, and finally politics. He took a prominent part in the *coup d'etat* of 1851, and was a prominent figure under the second empire.

Morocco (mō-rok'kō; Arabic name, *Moghreb-el-aksa*, the Extreme West), an empire or sultanate occupying the northwest extremity of Africa, bounded by the Atlantic Ocean, the Mediterranean, Algeria, and the desert; area, about 300,000 square miles. Pop. estimated at about 4,500,000. Its most remarkable natural feature is Mount Atlas, the great chain or series of chains extending through it from northeast to southwest, and reaching a height of 12,000 or 13,000 feet. Between the mountains and the sea are tablelands and

plains, some of them of great fertility. The rivers are unimportant, being mostly dry for part of the year, and generally diminishing in volume as they approach the sea. The coast offers few good harbors; the most frequented are Tangier, El-Araish (Laraiche), Rabat and Mogador. The climate in many parts is pleasant and temperate, in many others the summer heat is insufferable. The minerals include gold, silver, copper, iron and lead in larger or smaller quantities. The flora includes the esculent oak and cork oak; in the higher regions of the Atlas the cedar and Aleppo pine; the date palm and the dwarf palm east and south of the Atlas Agriculture is in the lowest possible condition, and the annual production is calculated barely to supply the wants of the country. The cereal crops include wheat, barley and maize; but dhurra or millet constitutes the chief support of the population. The vine is cultivated only near towns for the sake of the fresh grapes and for the raisins. All the fruits of the south of Europe are cultivated to some extent. Among the wild animals are the lion, panther, jackal, hyena, wild boar, gazelle, and several species of large antelope. The locust is a cause of much devastation. The ostrich is found on the southern frontiers. Cattle and sheep are reared, and the spirited small horses for which the country was once famous are still numerous. There are large numbers of goats, which furnish a principal article of export—the well-known Morocco leather. In general, among the rural population, each family supplies all its own wants. In the towns, however, some manufactures have sprung up, besides the well-known leather. Fez makes and exports the cloth caps which bear its name. Carpets, embroidered stuffs, pottery, arms, are also made. The trade is carried on by caravan with the interior, or by sea with European states, especially with Great Britain, next to which comes France. The Berbers are the oldest inhabitants of the country, and they devote themselves to agriculture rather than to pastoral pursuits. The Arabs form the bulk of the rural population in the plains; some of them are cultivators, and others are Bedouins. In the towns along the coast are found the Moors, and a considerable number of Jews inhabit all the commercial towns. To these must be added the negroes and their posterity of every shade. The civilization of Morocco has sunk to a low condition. The education at the schools and at the University of Fez does not go beyond the theology of the Koran. The public libraries, once famous, are now dispersed. Morality is represented as being in a deplorable state. The sovereign or sultan, styled by Europeans emperor, is absolute in the strictest sense. The imperial revenues are derived from arbitrary imposts on property, duties on imports and exports, monopolies. and fines or confiscations. The chief towns are Morocco and Fez, the one in the southwest, the other towards the northeast.—Morocco in ancient times formed part of Mauritania, and about 43 A.D. was incorporated in the Roman Empire. In the latter part of the seventh century the Arabs spread over North Africa, and took possession of Mauritania. Among ruling dynasties since then have been the Almoravides, Almohades, and others. The present dynasty, the ninth, was founded in 1648. In 1814 the slavery of Christians was abolished, and piracy was prohibited in 1817. The conquest of Algeria brought about complications with France, which led eventually to a dispute between France and Germany, and an international conference at Algeciras, Spain, in 1906. France was given police control of certain ports, the commercial rights of other nations to be observed, and France established a partial military occupation, with the tacit consent of the powers. In 1908-09 war existed between the Spanish forces at Melilla and the neighboring Riff tribes. After some reverses the Spanish were victorious and their position at Melilla was assured. A rebellion against Sultan Abdul led to his defeat in 1908, his brother Muley Hafid succeeding to the throne. In 1911 a controversy arose between France and Germany concerning their respective rights in Morocco, which ended in France transferring to Germany a considerable district in French Congo, in return for which France was left open to establish a protectorate in Morocco. The task of establishment, however, presented difficulties, and the year of 1912 was filled with a series of revolts and counter-revolts.

Morocco, formerly one of the capitals of Morocco, lies in the southwest of the country, on an extensive and fertile plain, 1500 feet above sea level. It is nearly 6 miles in circuit, and is walled, though its walls and towers are in a ruinous condition. The streets are unpaved, dirty, narrow, and irregular. There are several open areas used as market places, a covered bazaar, and many mosques. Near the palace, which is on the south of the city, is the Jews' quarter (El Millah), a walled inclosure of about 1½ miles in circuit, one-half of it nearly in ruins, very crowded, and excessively filthy. There are several tan-

ning and leather dyeing establishments. Pop. estimated at 40,000 to 50,000.

Morocco, a fine kind of leather made from the skins of goats, imported from the Levant, Barbary, Spain, Belgium, etc., tanned with sumach, dyed, and grained, the last process being that which gives it its well-known wrinkled appearance. It is extensively used in the binding of books, upholstering furniture, making ladies' shoes, etc. Imitation moroccos are made from sheep-skins, so perfect in appearance that it is difficult to distinguish them, but they are entirely lacking in the durability of the real article. The art of preparing morocco is said to have been derived from the Moors.

Moron (mo-ron'), a town of Spain, in Andalusia, 32 miles northeast of Seville. It has a fine church, and the ruins of a castle, long one of the most important strongholds of Spain, blown up by the French in 1812. Pop. 14,459.

Moroxite (mu-rok'sit), the crystallized form of apatite, occurring in crystals of a brownish or greenish-blue color.

Morpeth (mōr'peth), a borough in England in Northumberland, on the Wandsbeck, 14 miles north by west of Newcastle. It has a fine old parish church in the decorated English style. Its manufactures are considerable, but there are large collieries in the vicinity. Pop. 7436.

Morpheus (mōr'fūs), in Greek mythology, the son of sleep and god of dreams.

Morphia (mōr'fi-a), MORPHINE (mōr'fēn), the narcotic principle of opium, a vegetable alkaloid of a bitter taste, first separated from opium in 1816. It forms when crystallized from alcohol brilliant colorless prisms of adamantine luster. As it is very slightly soluble in water it is never used alone medicinally, but it readily combines with acids, forming salts extensively used in medicine. In small doses it is powerfully anodyne; in large it causes death, with narcotic symptoms.

Morris (mor'ris), CHARLES, author, born at Chester, Pennsylvania, in 1833. After a period spent in teaching and clerkship he became an active author and compiler, producing numerous works. Among these are *A Manual of Classical Literature; The Aryan Race: Civilization, an Historical Review of its Elements; Man and His Ancestor; Historical Tales*, etc. He compiled *Half Hours with the Best American Authors* and other works, did editorial work on several cyclopedias, and edited *Winston's Cumulative Encyclopedia.*

Morris, CLARA, actress, born at Cleveland, Ohio, in 1850. She went upon the stage at the age of 15 and won favorable recognition, her success at New York in 1870 being very great. Her greatest success was in the representation of strong emotional roles. She was married to Mr. O. F. Harriot in 1874. Losing her money after retirement from the stage, she became a magazine contributor of interesting theatrical gossip, tales, etc.

Morris, GEORGE P., poet and journalist, born at Philadelphia in 1802; died in 1864. He became an editor on the *New York Mirror* and the *Evening Mirror*, and in 1846 joined with N. P. Willis in founding the *Home Journal.* He wrote the popular poems *My Mother's Bible; Woodman, Spare that Tree;* and *Long Time Ago*, with other poems, and *Briercliff*, a drama. With Mr. Willis he edited *The Prose and Poetry of Europe and America.*

Morris, GOUVERNEUR, statesman, was born in Westchester County, New York, in 1752, and adopted the legal profession. In 1777 he was elected to the Continental Congress, and was also a member of the New York Constitutional Convention, in which, against John Jay, he championed and won the cause of religious liberty. He removed to Philadelphia in 1780, and in 1787 was a member of the Philadelphia Convention that framed the Constitution of the United States, the final draft being his work. In 1792 he was sent as Minister to France, and in 1800 was elected United States Senator from New York. He spent his later years in retirement, and died in 1816.

Morris, SIR LEWIS, poet, was born near Caermarthen, Wales, in 1834; educated at Oxford, where he was graduated first class in classics in 1855. He was called to the bar in 1861. His poems have been widely popular, and have had numerous editions. His *Jubilee Ode* was recognized by a silver medal from Her Majesty. He was knighted in 1895. He died in 1907.

Morris, RICHARD, an English scholar, born in London in 1833. He was educated at Battersea College; became lecturer on English language and literature at King's College School in 1869; took holy orders, and became curate of Christ Church, Camberwell, in 1871, and headmaster of the Royal Masonic Institution for boys in 1875. He did excellent service to the national study of English. He died in 1894.

Morris, ROBERT, signer of the Declaration of Independence, was born in England in 1734. In 1775 he

was delegate to the Continental Congress. He became notable as the chief financial support of the army during the later years of the Revolution, aiding it to the full extent of his credit, and in 1880 raising $1,400,000 to support Washington. He organized the Bank of North America, at Philadelphia, in 1781, the first bank in the United States, and was for several years superintendent of finance; in 1787 he was a member of the Convention that framed the United States Constitution; afterwards member of the first United States Senate. He was offered the post of Secretary of the Treasury, which he declined. He became bankrupt through unfortunate investments in his old age, and was imprisoned for debt. Congress failed to come to his rescue and he remained several years in prison, much to the discredit of the government. He died in 1806.

Morris, WILLIAM, an English poet, art writer, etc., was born in 1834. His artistic bent prompted him to embark in the designing and manufacture of high-class decorations for house interiors. This venture turned out a successful business speculation, and has had a material effect in improving the style of design employed for decorative textiles, wall-papers, etc. Morris published an epic poem, *Jason*, in 1867, *The Earthly Paradise*, in 1868-70, *Love is Enough*, in 1873, *Sigurd the Volsung* in 1877, etc. He translated various Scandinavian works, translated Virgil's *Æneid* and Homer's *Odyssey* into English verse, and published several lectures on art. He was a socialistic leader in Britain. Inventor of the 'Morris Chair.' He died in 1896.

Morris-dance (that is, *Moorish-dance*), a dance supposed to have been derived from the Moriscos in Spain, formerly danced at puppet-shows, May-games, etc., in England. Bells were fastened to the feet of the performers, which jingled in time with the music, while the dancers clashed their staves or swords. In the reigns of Henry VII and VIII it was a principal feature in the popular festivals.

Morrison (mor'is-un) ROBERT, an English missionary and orientalist; born in 1782; died in 1834. In 1807 he went out as a missionary for Canton. In 1814, having completed the issue of the New Testament in Chinese, he commenced, with the assistance of Dr. Milne, who had joined him in 1813, the translation of the Old Testament. He was also the author of a Chinese grammar and dictionary.

Morristown (mor'is-town), capital of Morris County, New Jersey, 31 miles W. by N. from New York, is a favorite summer residence for citizens of New York. During the Revolutionary war it was twice the headquarters of the American army. The house occupied by General Washington has been purchased by the State Historical Society, and contains a collection of interesting relics. Pop. 12,507.

Morse (mōrs) SAMUEL FINLEY BREESE, inventor of the electro-magnetic telegraph in its first practicable form, was born at Charlestown, Massachusetts, in 1791; died at New York in 1872. He was educated at Yale College, where he devoted special attention to chemistry and natural philosophy; but in 1811 went to England to study painting under West. In 1813 he was awarded the gold medal of the Royal Academy for his model of the *Dying Hercules*. Returning to the United States in 1815, he continued painting, and in 1826 succeeded in establishing

Samuel F. B. Morse.

in New York the 'National Academy of Design,' of which he was first president. In 1829 he went to Europe for three years, and during the return voyage worked out roughly a plan for employing electro-magnetism in telegraphy. It was not until 1835, however, that he was able to exhibit an instrument that was found to work well. By July, 1837, this instrument was perfected, and ultimately in 1843 Congress granted him means to construct an experimental line between Washington and Baltimore. This proved successful and as a result the Morse system of telegraphy has come into general use in America and Europe. In 1857 the representatives of ten countries met at Paris, and voted him 400,000 francs.

Morse's Telegraph. See *Telegraph*.

Morshansk (mår-shånsk'), a town of Central Russia, govern-

ment of Tambov, a great center of trade. Pop. 27,756.

Mortality (mor-tal'i-ti), Law of, the statement of the average proportion of the number of persons who die in any assigned period of life or interval of age, out of a given number who enter upon the same interval, and consequently the proportion of those who survive. Tables showing how many out of a certain number of infants, or persons of a given age, will die successively in each year till the whole become extinct, are generally called the tables of mortality. In England the bills of mortality, or abstracts from parish registers, were long the only means of arriving at these results; but being found very imperfect and unsatisfactory, they were supplanted in 1836 by a general registration. The registers, if kept with accuracy and minuteness, enable us to determine the proportion of deaths, not only at different ages and in different regions, but at different seasons, in persons of different occupations and habits, in towns, or the country; and thus afford valuable materials for the science of political economy. The average rate of mortality is affected by regular or constant causes, such as race, climate, age, sex, profession, social position, density of population, political institutions, habits, etc., and by such irregular or occasional causes as war, famine, pestilence, etc., but notwithstanding the interruption of these occasional causes a constant tendency to a mean has been found to exist in any given state of society. The tendency of a population to increase depends rather on the facility of procuring the means of subsistence than on the rate of mortality.

Mortar (mor'tär), a mixture of sand with slaked lime and water, used as a cement for uniting stones and bricks in walls. The proportions vary from 1½ part of sand and 1 part of lime to 4 or 5 parts sand and 1 of lime. When exposed to the action of the air this mixture absorbs carbon dioxide and 'sets,' forming a hard, compact mass. *Hydraulic mortars*, which harden under water, and are used for piers, submerged walls, etc., are formed from so-called *hydraulic lime*, containing considerable portions of silicia and alumina. See also *Cement*.

Mortar is a kind of short cannon, of a large bore, with a chamber, used especially for throwing shells. The fire from mortars is what is termed vertical fire, the mortar being directed at a high angle and the shell striking the ground nearly vertically. The principal recommendations of vertical fire are, that the shells search behind cover and produce a great moral effect, also that at high elevations a great range is obtained with a comparatively small charge of powder.

Mortgage (mor'gaj), in law, the conveyance of an estate, real or personal, by a debtor to his creditor, as a pledge or security for a debt. The debtor is called the mortgagor, the creditor mortgagee. The conveyance is absolute in form, but subject to a proviso by which it is to become void, or by which the pledge is to be reconveyed upon repayment to the grantee of the principal sum secured with interest, on a certain fixed day. Upon the non-performance of this condition the mortgagee's estate becomes absolute at law, but remains redeemable in equity during a limited period. In general, every description of property and every kind of interest in which it is capable of absolute sale, may be the subject of a legal mortgage. A mortgagee is not allowed to obtain any advantage out of the security beyond his principal and interest. Though the mortgagee, after the mortgagor's default in payment of the principal sum and interest has the absolute legal estate, he is still considered in equity to hold only as security for his debt. In order to obtain absolute possession of the estate, the mortgagee has to file a bill of foreclosure against the mortgagor, calling upon the latter to redeem his estate, forthwith, by payment of the principal money, interest and costs; and if he fail to do so within the time specified by the court he is forever barred and foreclosed of his equity of redemption, and the mortgagee becomes owner in equity, as he before was in law. In the event of a sale any surplus must be paid to the mortgagor.

Mortification (mor-ti-fi-kā'shun), in medicine is the death of a part of the body, while the rest continues to live, and often in a sound state. Mortification is a popular term, the scientific term being *gangrene* or *necrosis*, the former usually applied to the death of soft parts, the latter to the death of bone. Mortification is generally induced by inflammation, by exposure to freezing cold, by hospital fevers, by languid, or impeded, or stopped circulation, as in cases of bedridden or palsied persons, and by improper food, particularly the spurred rye.

Mortmain (mort'mān; Fr. *mort*, dead, *main*, hand), in law, possession of lands or tenements in dead hands, or hands that cannot alienate, as those of a corporation. *Alienation in mortmain* is an alienation of lands or tenements to any corporation, sole or aggregate, ecclesiastical or temporal, partic-

ularly to religious houses. Such conveyances were forbidden by Magna Charta.

Morton (mōr'tun), LEVI PARSONS, Vice-President of the United States, was born in Shoreham, Vermont, in 1824. In 1878 he was elected to Congress from New York; reëlected in 1880; and from 1881 to 1885 was minister to France. In 1888 he was elected vice-president on the Republican ticket with President Harrison.

Morton, PAUL, cabinet official, born in Detroit, Michigan, in 1857. He engaged in the coal business, then entered railroad service, and in 1898 was second vice-president of the Atchison, Topeka & Santa Fé Railroad. He was Secretary of the Navy 1904-05, resigning to become chairman of the Equitable Life Assurance Society. He died in 1911.

Morton, SAMUEL GEORGE, naturalist, was born at Philadelphia, Pennsylvania, in 1799; died in 1851. He studied medicine in Philadelphia and Edinburgh, in 1839 was appointed professor of anatomy in the Pennsylvania Medical College, and was for some years president of the Academy of Natural Sciences of Philadelphia. He was an earnest student of mineralogical and biological science and wrote many valuable papers on these subjects, while his monograph on the *Cretaceous Group of the United States* was very favorably received, as were also his *Crania Americana* and *Crania Egyptica*. He was among the leading students of craniography and donated a large collection of human skulls to the Academy of Natural Sciences.

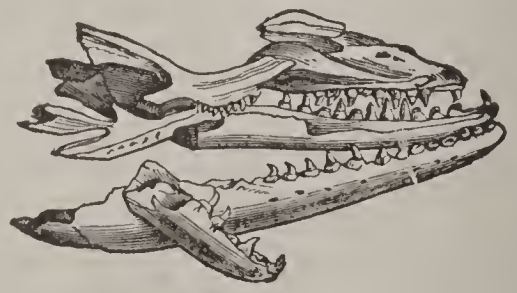
Morton, WILLIAM THOMAS, dental surgeon, born at Charlton, Massachusetts, in 1819; died in 1868. In 1844, while practicing in Boston, he discovered the method of producing anæsthesia with sulphuric ether. It was first publicly tested October 16, 1846.

Mosaic (mō-zā'ik), a term applied to a kind of inlaid work formed by an assemblage of little pieces of enamel, glass, marble, precious stones, etc., of various colors, cut, and disposed on a ground of cement in such a manner as to form designs, and to imitate the colors and gradations of painting. This kind of work was used in ancient times both for pavements and wall decoration, while in modern times paintings are by this means copied, and the art is also used in pavements, jewelry, etc. The most remarkable modern works of this kind have been executed by Roman, Venetian and Russian artists those of the Roman school being the most celebrated, and consisting in particular of a series of portraits of the popes, and copies of notable paintings by the great artists, such as Raffaele, Domenichino, Guido, etc. For the production of these works rods of opaque colored glass are employed, an immense variety of colors and shades being used. Pieces are cut from the ends of these rods, according to the color required, and are arranged side by side, their lower ends being attached by the cement while their upper ends show the design. From such works, when on a small scale, sections may be cut across, each section exhibiting the pattern.

Mosaic Gold, an alloy of copper and zinc, called also *ormolu* (which see); also a sulphide of tin, the *aurum musivum* of the ancients.

Mosaic Wool-work, rugs, etc., made of variously-colored woolen threads, arranged so that the ends show a pattern. The threads are held firmly in a frame, so as to form a dense mass, with the upper ends of the threads presenting a close surface; this surface is smeared with a cement, and has a backing of canvas attached, after which a transverse section is cut the desired thickness of the pile, and so on with a number of similar sections.

Mosasaurus (mō-za-sạ'rus), a gigantic extinct marine lizard occurring in the calcareous freestone which forms the most recent deposit of the Cretaceous formation. This reptile was about 25 feet long, and possessed a



Skull of *Mosasaurus Hofmanni*.

tail of a construction that must have rendered it a powerful oar.

Moscheles (mō'she-les), IGNAZ, a pianist and composer, born at Prague in 1794, his father being a Jewish merchant. He was a professor of music at the Royal Academy, London, in 1821-46. Mendelssohn in Berlin and Thalberg in London were among his pupils, and at Mendelssohn's request Moscheles gave up his London professorship and took a similar post at Leipzig, retaining it till his death, in 1870. Among his finest compositions may be mentioned his *Concertos* Nos. 3, 4 and 5; the *Concertos Fantastique and Pathétique;* his *Sestett and Trio;* his *Sonatas Caractéristique and Mélancolique;* and his studies.

THE KREMLIN AT MOSCOW

Moschidæ (mos′ki-dē), the musk-deer family of animals. See *Musk-deer.*

Moschus (mos′kus), a Greek pastoral poet, a native of Syracuse. The time when he flourished is not accurately known, some making him a pupil of Bion, who is supposed to have lived under Ptolemy Philadelphus (third century B.C.), while others suppose him a contemporary of Ptolemy Philomētor (B.C. 160). Four idyls form the whole of the remains of Moschus, of which the most beautiful is the fine lament for Bion.

Mosby, JOHN SINGLETON, soldier, born in Powhatan County, Virginia, in 1833. During the Civil war he entered the Confederate service and became leader of an independnt company of raiders who did very efficient work in Virginia in destroying supply trains, capturing outposts, etc. He was of great service to Lee in scouting and raiding work and escaped all efforts to capture him. After the war he engaged in legal practice, and was consul at Hong-Kong 1875-85.

Moscow (mos′kō; Russian, *Moskwá*), the second capital (formerly the only capital) of the Russian Empire. It is the chief town of the government of the same name, and is situated in a highly-cultivated district on the Moskwa, 400 miles southeast of St. Petersburg, with which it is in direct communication by rail. It is surrounded by a wall or earthen rampart 26 miles in circuit and of no defensive value; and a considerable portion of the enclosed space is unoccupied by buildings. The quarter known as the Kreml or Kremlin, on a height about 100 feet above the river, forms the center of the town, and contains the principal buildings. It is enclosed by a high stone wall, and contains the old palace of the czars and several other palaces; the cathedral of the Assumption, founded in 1326, rebuilt in 1472; the church of the Annunciation, in which the emperors are recrowned; the cathedral of St. Michael; the Palace of Arms, an immense building occupied by the senate, the treasury and the arsenal; and the Tower of Ivan Veliki 1326, rebuilt in 1472; the church of the and having at its foot the great Czar Kolokol, or king of bells, 60 feet round the rim, 19 feet high, and weighing upwards of 192 tons, the largest in the world. Outside the Kreml the chief building is the cathedral of St. Vassili, with no less than twenty gilded and painted domes and towers, all of different shapes and sizes. Among the principal educational establishments are the Imperial University, founded in 1755 by the Empress Catharine. It has a rich museum and a library of 200,000 volumes, and is the most important of the Russian universities. Moscow is the first manufacturing city in the empire, and of late years its industrial and commercial activity has greatly increased. The principal manufactures are textile fabrics, chiefly woolen, cotton and silk, besides hats, hardware, leather, chemical products, beer and spirits. From its central position Moscow is the great entrepôt for the internal commerce of the empire. The foundation of the city dates from 1147.

Church of Vassili Blanskenoy, Moscow.

It became the capital of Muscovy, and afterwards of the whole Russian Empire; but was deprived of this honor in 1703, when St. Petersburg was founded. The principal event in the history of Moscow is its occupation by Napoleon's army in 1812 and the burning of it for the purpose of dislodging the French from their winter quarters. Pop. (1907) 1,359,254. —The government forms an undulating tract of about 12.855 square miles, and the soil is mostly productive, the forests occupying about 39 per cent. Pop. (1906) 2,733,300.

Moselle (mo-zel′; German, *Mosel*), a river which rises in France, in the department of Vosges, and which after a winding, and in some parts very tortuous, course falls into the Rhine at Coblenz; total length, about 360 miles, of which 220, commencing at the junction of the Meurthe, are navigable. The wines of the Moselle basin are well known as light, sparkling wines, with a marked aroma.

Moselle (mō-zel), formerly a department of France; area, 2034 square miles. The southeastern and major part was ceded to Germany in 1871; the remainder, united to Meurthe, forms the new department of Meurthe-et-Moselle (which see).

Moses (mō'ses), leader, prophet, and legislator of the Israelites, was born in Egypt about 1600 B.C., during the time of the oppression of the Hebrews. His history, as given in the Hebrew scriptures, is as follows: His father, Amram, and mother, Jochebed, both of the race of Levi, were obliged to expose him in obedience to a royal edict, but placed him in a basket of bullrushes on the river border, where he was found by the daughter of the Egyptian king as she went to bathe. She adopted him as her son, and it is believed that she had him educated for the duties of the priesthood, the means of instruction thus afforded him being the best which his time possessed. His expedition into Ethiopia, in his fortieth year, as leader of the Egyptians, when he subdued the city of Saba (Meroe), won the affections of the conquered Princess Tharbis, and married her, rests only on a tradition preserved by Josephus. An outrage committed by an Egyptian on a Hebrew excited his anger, and he secretly slew the Egyptian. The deed became known, and he escaped the vengeance of the king only by a hasty flight into Arabia. Here he took refuge with Jethro, a Midianitish prince and a priest, and espoused his daughter Zipporah. The promises of God that his race would become a great nation occupied much of his thoughts, and at last God appointed him the chosen deliverer from the bondage in Egypt. Being slow of speech, and possessing none of the arts of an orator, God gave him power to prove his mission by miracles, and joined to him his elder brother Aaron, a man of little energy, but of considerable eloquence. Thus prepared, Moses returned to Egypt at the age of eighty years to undertake the work. At first he had the greatest obstacles to overcome, but after the visitation of ten destructive plagues upon the land, Pharaoh suffered the Hebrews to depart. Moses conveyed them safely through the Red Sea, in which Pharaoh, who pursued them, was drowned with his army. New difficulties arose, however. The distress of the people in the desert, the conflicts with hostile races, the jealousies of the elders, often endangered his authority and even his life, despite the miraculous attestations of his mission. During the term of the encampment at Sinai he received the Ten Commandments and the laws for the regulation of the lives of the Israelites. When they were already near the end of their journey towards Canaan Moses saw himself compelled, in consequence of new evidences of discontent, to lead them back into the desert, for forty years more of toilsome wandering. He was not himself permitted, however, to see the Israelites settled in their new country, on account of a murmur which, in the midst of his distress, he allowed to escape against his God. After appointing Joshua to be the leader of the Hebrews he ascended a mountain beyond Jordan, from which he surveyed the land of promise, and so ended his life in his 120th year. All superstitious reverence for his bones or his place of sepulture was prevented by the secrecy of his burial, and its effectual concealment from the people. See *Pentateuch.*

Mosheim (mos'hīm), JOHANN LORENZ VON, a German theologian, born at Lübeck in 1694, studied at Kiel. In 1723 he became professor of theology at Helmstädt. In 1747 he was appointed professor and chancellor of the University of Göttingen, where he remained till his death in 1755. Mosheim was the father of ecclesiastical history. His principal work on this subject is the *Institutiones Historiæ Ecclesiasticæ* (1755), afterwards published under various other forms, and translated into German and English.

Moskwa, BATTLE OF THE. See *Borodino.*

Moslem (mos'lem; Arabic, *muslim*, a true believer; plural, *muslimin*, hence the corrupt form, *mussulman*), a general appellation in European languages for all who profess Mohammedanism.

Mosque (mosk), a Mohammedan church or house of prayer. These buildings are constructed in the Saracenic style of architecture, and often astonish by their extent and the grandeur and height of their cupolas or domes. In these Mohammedan places of worship we find neither altars, paintings, nor images, but a great quantity of lamps of various kinds, arabesques which form the principal interior ornament, and sentences from the Koran written on the walls. Every mosque has its minaret or minarets (which see). The buildings are often quadrangular in plan, with an open interior court, where are fountains for ablutions. The floor is generally covered with carpets, but there are no seats. In the direction towards Mecca is the *mihrab*, a recess in the wall to direct the worshipers where to turn their eyes in prayer, and near this is the *mimbar* or

pulpit. The buildings may embrace accommodation for educational purposes, etc., besides the temple proper.

Mosquito (mus-kē′to), a general name for such insects of the gnat family as inflict a severe bite and make themselves a pest to people residing in warm climates, or during the warm season in many arctic regions. As a protection for sleepers close curtains of gauze (mosquito nets or curtains) are used; and the skin is also rubbed with various preparations to prevent their bites, and fires are lighted to drive them off. It has been discovered within recent years that mosquitoes are not alone a pest, but a serious danger to mankind, as conveyors of the germs of several diseases, especially yellow fever and malaria. As the mosquito infests man with those diseases the diseased man infects other mosquitoes, and thus the maladies are spread. By screening the windows of hospitals and sleeping rooms Havana was freed from yellow fever during the American occupation in 1898 and the Panama Canal district has recently been freed from this fatal malady. In like manner malaria has been prevented in the Roman Campagna and other places. The discovery is one of extreme importance and has led to the study of other insects suspected of germ-bearing habits or properties. See *Malaria* and *Yellow Fever*. See *Gnat*.

Court of the Mosque of Tooloon, Cairo.

Mosquito Territory (mus-kē′tō), a region of Central America, lying on the Caribbean Sea, and forming the eastern seaboard of Nicaragua. For a considerable period it was governed by a native chief, and was under British protection, but in 1860 it was made over to the State of Nicaragua. The capital is called Bluefields.

Moss-agate. See *Mocha-stone*.

Moss (mos), the name given to a group of cryptogamic or flowerless plants of considerable extent, and of great interest on account of their very singular structure. They are in all cases of small size, seldom reaching a foot in height, but having a distinct axis of vegetation, or stem covered with leaves; and are propagated by means of reproductive apparatus of a peculiar nature. They are formed entirely of cellular tissue, which in the stem is lengthened into tubes. Their reproductive organs are of two kinds—axillar cylindrical or fusiform bodies, containing minute roundish particles; and thecæ or capsules, supported upon a stalk or *seta*, covered with a *calyptra*, closed by an *operculum* or lid, within which is a *peristome* composed of slender processes named *teeth*, and having a central axis or *columella*, the space between which and the walls of the theca is filled with minute *sporules*. Masses are found in cool, airy, and moist situations, in woods, upon the trunks of trees, on old walls, on the roofs of houses, etc. The genera of mosses, which are

numerous, are principally characterized by peculiarities in the peristome, or by modifications of the calyptra, and of the position of the *urn*, or hollow in which the spores are lodged.

Mostar (mos-tär′), the capital of Herzegovina. It lies on both sides of the Narenta, in a plain about 6 miles long by 2½ miles broad; is walled, and has a vizier's palace, a number of mosques, and two extensive well-supplied bazaars. It carries on a considerable trade. Pop. 14.500.

Mosul (mō-söl′), a town of Asiatic Turkey, 220 miles northwest of Bagdad, on the right bank of the Tigris, opposite the remains of the ancient Nineveh, where there is a bridge of boats. The houses are mostly built of sun-dried bricks, and besides numerous mosques, there are churches of the Nestorians, Jacobites, and other Christians. It has a transit trade between Bagdad, Syria, Kurdistan and Constantinople. Its principal manufactures are cotton stuffs. It was formerly celebrated also for its muslins (hence the name *muslin*). Pop. estimated at 40,000.

Motacilla (mot′a-sil-a), a genus of passerine birds including the wagtails.

Motazilites (mo-taz′il-īts), a numerous and powerful sect of Mohammedan heretics, who to a great extent denied predestination, holding that man's actions were entirely within the control of his own will. They maintained also that before the Koran had been revealed man had already come to conclusions regarding right and wrong, and held extremely heretical opinions with reference to the quality or attributes of Deity. They appeared a few generations after Mohammed, and became the most important and dangerous sect of heretics in Islam.

Motet (mō-tet′), in music, a name applied to two different forms of composition: (1) a sacred cantata, consisting of a number of unconnected movements, as solos, duets, trios, quartets, choruses, fugues, etc. (2) A choral composition, usually of a sacred character, beginning with an introductory song, followed by several fugal subjects, the whole ending with the exposition of the last subject, a repetition of the introduction, or a special final subject.

Moth, the popular name of a numerous and beautiful division of lepidopterous insects, readily distinguished from butterflies by their antennæ tapering to a point instead of terminating in a knob, by their wings being horizontal when resting, and by their being seldom seen on the wing except in the evening or at night (though some moths fly by day); hence the terms crepuscular and nocturnal lepidoptera applied to them.

Maia-Moth (*Hemileuca Maia*).

Among the more notable of the moths are the 'feather' or 'plume-moths,' the death's-head moth, the 'clothes-moths,' and the 'silk-moth' (*Bombyx mori*).

Mother Carey's Chicken, the sailors' name for the stormy petrel. See *Petrel.*

Mother-of-pearl, or NACRE, the hard silvery brilliant internal or nacreous layer of several kinds of shells, particularly of the oyster family, often variegated with changing purple and azure colors. It is destitute of coloring matter, but is composed of a series of minute and slightly imbricated layers or ridges which have the power of decomposing the rays of light, thus producing beautiful iridescent hues. The large oysters of the tropical seas alone secrete this coat of sufficient thickness to render their shells available for the purposes of manufacture. Mother-of-pearl is extensively used in the arts, particularly in inlaid work, and in the manufacture of handles for knives, buttons, toys, snuff boxes, etc.

Motherwell (mu*th*′er-wel), a town in Scotland, county of Lanark, 12 miles southeast of Glasgow. The inhabitants are chiefly employed in its extensive coal mines, iron and steel works, foundries and engineering shops. Pop. 30,418.

Motherwell, WILLIAM, a Scottish poet and antiquary, born at Glasgow in 1797; died in 1835. Educated at Edinburgh and Paisley, at the age of fifteen he was apprenticed to the sheriff-clerk of the latter town, and became sheriff-depute in 1819. It was while in this situation that he did his best work both as poet and ballad-collector. After editing the collection of songs called the *Harp of Renfrewshire* (published in 1819), he compiled the more important collection of ballads published in

1827, under the title of *Minstrelsy: Ancient and Modern*, with a historical introduction and notes. In 1828 he became editor first of the *Paisley Advertiser*, and then (1830) of the *Glasgow Courier*. He published in 1832 a collection of his own poems.

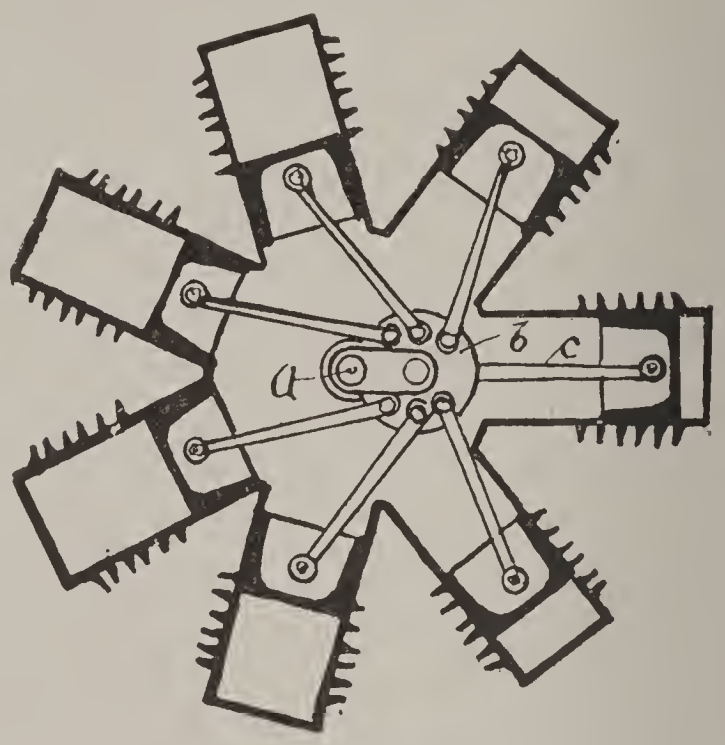
Motherwort (mu*th'*er-wort; *Leonūrus eardiăca*), a labiate plant, 3 feet high, flowers in crowded whorls, white with a reddish tinge, found in some parts of Europe and North America.

Motion (mō'shun), in physical science, is the passing of a given body from one place to another. We have no idea of absolute position in space, so that when we speak of the motion of a point it is only in relation to some point regarded as fixed. Thus our conception of the movement of the earth is derived from its relation in position to the sun and stars. Bodies move in various directions, their motion being described as *rectilinear* when they move in a straight line, *eurvilinear* when they move in a curve, *vibratory* when they move to and fro in relation to a fixed point, *rotatory* when they turn on an axis, and *eireular* when they sweep round a given point. For Newton's laws of motion see *Dynamics*.

Motley (mot'li), JOHN LOTHROP, historian and diplomatist, born at Dorchester, Massachusetts, in 1814; died in 1877. He was educated at Harvard University and at Göttingen in Germany; published two novels called *Morton's Hope* (1839) and *Merry Mount* (1849), both of which were unsuccessful; contributed to the *North Amerieau Review;* and entered political life as a member of the Massachusetts House of Representatives. He published, after ten years' labor and a journey to Europe, his great *History of the Rise of the Duteh Republie* in 1856, a work which was further developed in the *History of the United Netherlands* (1860-65); and the *Life and Death of John Barneveld* (1874). He was ambassador from the United States to Vienna in 1861-67, and to London in 1869-70. His correspondence, in 2 vols., edited by Geo. W. Curtis, has been published (1889).

Mot-mot, a beautiful South American fissirostral bird of the genus *Momotus* or *Prionites*, about the size of a jay.

Motor (mō'tur), a machine for transforming natural energy in various forms into mechanical work, the term in the widest sense embracing windmills, water wheels, and turbines, steam engines, the various kinds of gas engines, compressed air motors, petroleum motors, electric motors, etc. Steam, hot air, gas and petroleum motors are all thermic motors, because in all of them the source of energy is heat. See *Electro-Motors*.



Section of Gnome Aeroplane Motor.

Motor-car. See *Automobile*.

Motor-generator Set, an alternating current motor coupled to a direct current generator. It is often used in arc lighting and in supplying three-wire direct current systems from alternating mains.

Mott, LUCRETIA (COFFIN), reformer, was born in Nantucket, Massachusetts, in 1793; died in 1880. She married James Mott, like herself interested in the anti-slavery cause. She joined the Friends in 1818. In addition to her advocacy of anti-slavery, she was an able advocate of equal suffrage.

Mott, VALENTINE, surgeon, was born at Glen Cove, Long Island, in 1785. He studied in London and Edinburgh. In 1811 he was professor of surgery in Columbia College; afterwards in other colleges. Dr. Mott gained world-wide reputation for boldness and originality as a surgeon. He died in 1865.

Moufflon, MOUFLON (mö'flon), the *Ovis*, or *Caprovis*, *Musimon*, a wild animal of the sheep kind, inhabiting the mountainous parts of Corsica, Sardinia, and Greece. It is about the size of a small fallow-deer, and although covered with hair instead of wool, bears a stronger resemblance to the ram than to any other animal, both in regard to its horns and its general conformation.

Moukden. See *Mukden.*

Mould (mōld), a minute fungoid or other vegetable growth of a low type, especially one of such vegetable organisms as appear on articles of food when they are left neglected, on decaying matters, bodies which lie long in warm and damp air, animal and vegetable tissues, etc.

Mouldings (mōld'ingz), in architecture, a general term applied to the varieties of outline or contour given to the surfaces or edges of various subordinate parts or features of buildings, whether projections or cavities, such as cornices, bases, door or window jambs, lintels, etc.

Moulins (mö-laṇ), a town of France, capital of the department of Allier, on the river of that name, 164 miles S. S. E. of Paris. It has among its edifices a cathedral, a college, an old castle, and its chief manufactures are cutlery, hosiery, ivory articles, etc. Pop. (1906) 18,997.

Moulmein (möl-mīn'), or MAULMAIN (maṳl-māṇ'), a seaport of Burmah, division of Tenasserim, at the mouth of the river Salween. It has a

good harbor, and a considerable trade chiefly in teak, cotton, rice, tobacco, stick-lac, lead, copper, cocoanuts, hides and live stock. Pop. 58,346.

Moult (mōlt), the process of shedding or casting feathers, hair, skin, horns, etc. The word is most commonly used with regard to birds; but other animals, such as crabs and lobsters, which shed their entire shells, frogs and serpents, which cast their skins, and deer, which shed their horns, also moult.

Mound Birds (*Megapodidæ*), a family of gallinaceous birds, remarkable for the large mounds which they build as incubators for their eggs. They are natives of the islands of the Pacific. The Australian species (*M. tumulus*) is about the size of the common fowl, and builds mounds of vegetable refuse, leaves, and soil, adding to them yearly till they become of great size. The largest on record measured 150 feet in circumference. The eggs are laid in separate holes in the mound, at a depth of 5 or 6 feet, and left to be hatched by the warmth of the decomposing vegetable matter. In a related genus (*Leipoa*) the eggs are laid separately in a circle in the center of the mound and deeply covered with compost. In the genus *Lallegalbus* the mounds are used socially by a number of birds.

Mound Builders, the name given to the Indians who formerly inhabited the Ohio and Mississippi valleys, and have left some very remarkable earthworks as their only memorials. The best known group of mounds is near Newark, Ohio, and consists of elaborate earthworks, in the form of a circle, octagon and square, enclosing an area of about 4 square miles, on the upper terrace between two branches of the Licking River. In addition, the neighboring hills are crowned with tumuli or mounds, apparently erected by the same people and containing human remains. Similar mounds are found in many parts of the Mississippi Valley States, some of them seeming to have been erected for purposes of defense, others for burial, and some very large ones for religious purposes. One, of considerable length, is in the form of a snake, with what seems intended for an egg in its mouth. Others resemble quadrupeds, a trunked animal, like the elephant, being among them. The Mound Builders were formerly supposed to be an anterior, semicivilized race, but it is now believed that they were the ancestors of the present Indians, as some of the Gulf State Indians have built mounds within historic times.

Moundsville, a city of West Virginia, capital of Marshall Co., on the Ohio River, 12 miles below Wheeling. It is in a coal-mining district, and has glass and brick works,

stove, cigar and whip factories. It is named from a remarkable artificial mound nearly 75 feet high, of prehistoric Indian erection. Pop. 8918.

Mountain (moun'tin), a mass of earth and rock rising above the surface of the globe higher than a hill. Mountains are usually found in groups, systems, ranges, or chains, though isolated mountains, due to volcanic action, are also found. The elevation of great mountain masses is due to gigantic subterranean movements long continued; but mountains of considerable mass have also been carved out by surface denudation. The highest mountain in the world, so far as known, is Mount Everest, one of the Himalayan range, which is 29,002 feet above the level of the sea.

Mountain, THE. See *Montagnards.*

Mountain-ash. See *Rowan-tree.*

Mountain-blue, a carbonate of copper with azure vitreous luster liable to change to green if substance is mixed with oil.

Mountain-cork, a white or gray variety of asbestos, so-called from its extreme lightness, as it floats in water. Called also *Mountain-leather.*

Mountain-limestone, a calcareous rock, containing marine shells and corals, devoid of coal. It is situate immediately below the millstone-grit, and above the old red sandstone. It is otherwise termed *Carboniferous Limestone.*

Mount Carmel, a city, capital of Wabash County, Illinois, on the Wabash River, 24 miles S. W. of Vincennes. It has railroad shops, flour and saw mills, and other industries. Pop. 6934.

Mount Carmel, a borough of Northumberland County, Pennsylvania, 6 miles E. of Shamokin, on the Lehigh Valley and other railroads. Coal is very extensively mined here, and mining machinery, miners' supplies, etc., are manufactured. Pop. 17,532.

Mount Clemens, a city of Michigan, capital of Macomb County, on the Clinton River, at head of navigation, 3 miles from Lake St. Clair and 25 miles N. N. E. of Detroit. It has steamboat connection with Detroit and is a health resort, having mineral springs considered very efficacious in gout and rheumatism. Wagons and sleighs, lumber, burial caskets, as well as wood-working machinery are manufactured. Pop. 7707.

Mount Desert, a mountainous island in the Atlantic, belonging to Hancock County, Maine, off the coast; was settled by the French in 1608. It is 14 miles long and 7 miles wide. It is a favorite place of summer resort.

Mount Holly, a town of New Jersey, capital of Burlington County, on Rancocas Creek, 19 miles E. by N. of Philadelphia. It is in an agricultural district, and has manufactures of shoes, hammocks, canned goods, etc. Pop. 5500.

Mount McKinley, a mountain of Alaska, about 20,500 feet high, being the tallest known peak on the North American continent. It is about 125 miles N. of Cook Inlet, near the intersection of 63° N. lat. and 151° W. lon.

Mount Pleasant, a borough of Westmoreland County, Pennsylvania, 32 miles S. E. of Pittsburgh. It has glass, coke and brewing interests, and coal is mined nearby. Pop. 5812.

Mount Vernon, memorable as the residence of George Washington, is in Fairfax County, Virginia, on the west bank of the Potomac, 15 miles below Washington City. The mansion and six acres surrounding were purchased in 1859 by the Ladies' Mount Vernon Association, and thus secured as a national possession. It contains various articles of interest relating to Washington and his family.

Mount Vernon, a city, capital of Jefferson County, Illinois, 77 miles S. E. of St. Louis, Mo. Its manufactures include railroad cars, axe handles, lumber and flour. Pop. 8007.

Mount Vernon, a city of Indiana, capital of Posey County, on the Ohio River, about 33 miles below Evansville. It has several saw and flour mills, foundry, cooperages, and straw-board and other industries. Pop. 5563.

Mount Vernon, a city of Westchester County, New York, on the Bronx River, 15 miles N. of New York City. It is a residential city for New York business people. Pop. 30,919.

Mount Vernon, a city of Ohio, capital of Knox County, on Vernon River, 45 miles N. E. of Columbus. It has abundant water power and manufactures of importance, including foundries, bending works, a large steel plant, engine works, etc. Pop. 9087.

Mount Washington, the highest peak in New England, is 6226 feet high. It is in the White Mountains of New Hampshire, 85 miles N. W. E. of Concord, and a favorite place of resort in the heated term of summer.

Mourning (mōr'ning), as the outward expression of grief, has greatly varied at different times and among different nations. Thus the eastern nations and the Greeks cut off their hair, while the Romans allowed the beard and hair to grow; and as an evidence of mourning the ancient Egyptians wore yellow; the Ethiopians, gray; the Roman and Spartan women, white, which is still the color of grief in China, Japan and Siam; in Turkey, blue and violet; and in the other European countries black is used for this purpose. The Jews, in sign of grief at the loss of their relatives, rent their garments, tore out their hair, and wore coarse garments of a dark color; and with the Greeks and Romans it was the custom to lay aside all ornaments of dress, to abstain from the bath and other indulgences.

Mourzouk, or MURZUK (mu̱r-zu̱k'), the capital of the pashalic of Fezzan, in the regency of Tripoli, situated 480 miles southeast of Tripoli. It is girt by an earthen wall, and was at one time a place of great commercial importance. Pop. about 6500.

Mouse (mous), the name of a number of rodents of which the most familiar is the domestic mouse (*Mus musculus* or *domesticus*), too well known to need description. The harvest-mouse (*Mus messorius* or *minūtus*), the smallest of quadrupeds, is a hibernating mammal, and constructs a little nest of grass, etc., entwined round and supported by the stalks of the corn or wheat. The common field-mouse (*M. sylvaticus*) is of a dusky brown, with a darker strip along the middle of the back, while the tail is of a white color beneath. There are about a hundred members of the mouse genus, of which the common rat is one. The short-tailed field-mouse, or 'meadow-mouse,' is not a true mouse, but one of the voles (*Arricŏla*). It is of a reddish-brown color, inclining to gray, the under parts are lighter, or ashy-brown, and the tail and feet are of a dusky-gray color. The dormouse also is of a different family from the true mice.

Mouse-ear Chickweed (*Cerastium*), a genus of plants, nat. order Caryophyllaceæ, consisting of many pubescent herbs with small leaves and white flowers, forming common weeds in all temperate and cold regions. The Virginia mouse-ear is found from Canada to Florida.

Mousquetaires du Roi (mös-kė-tār dü rwà; 'musketeers of the king'), under the old French regime mounted companies of royal guards. They were instituted by Louis XIII, and served as a school to many of the most distinguished French commanders.

Mouth, the aperture in the head of an animal through which food is received and voice uttered; or generally the anterior opening of the alimentary canal. In the higher animals the use of the mouth is for mastication, the emission of sound or voice, deglutition, and taste. In many animals of a low type of structure there is no distinct mouth. Thus in the simpler Protozoa the food is taken into the interior of the body by a process of intussusception, any portion of the surface being chosen for this purpose, and acting as an extemporaneous mouth.

Moving Pictures. See *Vitascope.*

Moving Plant (möv'ing), (*Desmodium gyrans*, nat. order Leguminosæ), a native of India, often cultivated in Europe in stoves, having violet flowers, and leaves consisting of two lateral leaflets and one larger terminal leaflet. It is remarkable for the motions of its leaflets, which are constantly twisting about in a variety of ways, especially under the influence of light and heat.

Moving Stairway. See *Escalator.*

Moxa (mok'sà), a soft, downy substance prepared in China and Japan from the young leaves of certain species of *Artemisia*. In eastern countries it is used for the gout, etc., by burning it on the skin. This produces a dark-colored spot, the exulceration of which is promoted by applying a little garlic.

Mozambique (mō-zam-bēk'), a Portuguese government on the east coast of South Africa, extending from Cape Delgado to Delagoa Bay, and to an uncertain distance into the interior; area estimated at about 380,000 square miles, only a small part of which is occupied. The coast is generally low, beset with reefs and small islands, and possessed of very few good harbors. Inland there rises a broad plateau, with groups and chains of mountains running mostly parallel to the coast, and nowhere reaching a great height. The climate is excessively hot, and, except on the elevated regions, unhealthy. Most tropical fruits thrive, cotton succeeds well, and the forests produce valuable woods. The prin-

cipal articles of trade are ivory and skins. The capital is the town of Mozambique, situated upon a small coral island near the coast, having a good harbor and a small trade. Pop. about 7000.

Mozambique Channel, the passage between the east coast of Africa and the island of Madagascar; length about 1050 miles, average breadth about 450 miles. In its north part lie the Comoro Islands.

Mozarabs (mo-zär'abz), a name applied by the Mohammedans in Spain to the Christians among them who retained their own religion. The Mozarabic liturgy which they used was suppressed about 1060, but was revived at the beginning of the sixteenth century in Toledo, where it is still preserved.

Mozart (mō-zärt'; German pron. mō'-tsärt), JOHANN CHRYSOSTOMUS WOLFGANG AMADEUS, a great German composer, born at Salzburg in 1756; died at Vienna in 1791. At the age of four years his father, Leopold Mozart, a violinist of repute, began to teach him some minuets and other small pieces on the harpsichord. From this period he made rapid progress, and a concerto for the harpsichord, which he wrote in his fifth year, was so difficult that only the most practiced performer could play it. In his sixth year Mozart was taken by his father, along with his sister, to Munich and Vienna, where the little artists were received at court with great favor. In 1763 the family made a journey to Paris, where Mozart published his first sonatas for the harpsichord; and in the following year they proceeded to England, where the child-musician performed before the court the most difficult compositions of Bach and Handel. Returning to Salzburg after visiting Holland, the family again went to Vienna in 1767, where the boy received a commission from the emperor to write the music of a comic opera, but owing to the opposition of the court musicians the work was never performed. In 1769 Mozart, who had been made master of the concerts at the court orchestra at Salzburg, commenced a journey to Italy in company with his father. In Rome he wrote down, on hearing it, the famous *Miserere*, annually sung in the Sistine Chapel during the holy week. At Milan in 1770 he composed, in his fourteenth year, his first opera, *Mithridates*, which was performed more than twenty times in succession. Henceforth he resided chiefly in Salzburg, but also visited Paris, Munich, and finally Vienna. In the latter city, although he was appointed composer to the court, he found it necessary to maintain himself by giving lessons in music and writing waltzes. Notwithstanding this poverty it was here that most of his best work, such as his famous operas, *Le Nozze di Figaro* ('The Marriage of Figaro'), *Don Giovanni*, *La Clemenza di Tito* ('Clemency of Titus), *Die Zauberflöte* ('The Magic Flute'), and his last work, the *Requiem*, were written. It was here also that the best pianist and greatest composer of his time —perhaps of the world—died in obscurity and was buried in a pauper's grave. The extent of work done by Mozart during his short life is almost incredible, and in every department of composition, whether vocal or instrumental, he excelled. In the history of music he stands most prominently forward as an operatic composer, his *Don Giovanni*, *Magic Flute* and *Marriage of Figaro* being works previously unequaled and never since surpassed. In his character he was kind-hearted, guileless, cheerful, void of envy, almost boyish to the last.

Mtzensk (m'tsensk), a town of Russia, province of Orel, 35 miles N. E. of Orel. Pop. 9390.

Mualitch'. See *Muhalitch.*

Much Woolton, a town of England, county of Lancaster, 5 miles southeast from Liverpool. There are extensive quarries in the neighborhood. Pop. 4320.

Mucilage (mū'sil-ij), a solution of some gummy substance in water, giving it a certain consistence; in chemistry, one of the proximate elements of vegetables, a carbohydrate ($C_6H_{10}O_5$, or similar formula). It is contained abundantly in gum tragacanth, many seeds, as linseed, quince seed, etc., and certain roots, as marsh-mallow. It forms a thick jelly with water, and when boiled with dilute sulphuric acid gives rise to a sugar and a gum.

Mucius Scævola (mū'si-us sev'o-la), the hero of a Roman legend to the effect that having attempted to assassinate Porsenna, King of Etruria, Mucius was ordered to be burned alive, but he won the king's favor and pardon by fearlessly holding his hand in the fire.

Mucor (mū'kur), a genus of fungi to which most of the matter constituting mold on cheese, paste, decaying fruits, and other substances is referred. The most common species is *M. mucēdo.*

Mucous Membrane (mū'kus), a membrane that lines all the cavities of the body which open externally and secretes the fluid mucus. See *Mucus.*

Mucu'na. See *Cowitch.*

Mucus (mū'kus), a viscid fluid secreted by the mucous membrane of animals, which it serves to moisten and defend. It covers the lining membranes of all the cavities which open externally, such as those of the mouth, nose, lungs, intestinal canal, urinary passages, etc. It is transparent, glutinous, thready, and of a saline taste; it contains a great deal of water, chloride of potassium and sodium, lactate of sodium and of calcium, and phosphate of calcium. Mucus forms a layer of greater or less thickness on the surface of the mucous membranes, and it is renewed with more or less rapidity. Besides keeping these membranes in a moist and flexible condition, it also protects them against the action of the air, of the aliment, the different glandular fluids, and agencies that might otherwise irritate and inflame.

Mud, in geology, a mixture of clay and sand with organic matter. Mud may be argillaceous, calcareous, or otherwise, according to the most notable ingredient which enters into its composition.

Mudar (mū'dar), the Indian name of *Calot. ʒpis gigantea*, a shrub or small tree of the nat. order Asclepiadaceæ, and also given to a substance used medicinally in India with great alleged effect in cutaneous diseases, and obtained from this and another species (*C. procēra*). The inner bark of *C. gigantca* also yields a valuable fiber.

Mud-bath, a kind of bath connected with some mineral springs, consisting of mud transfused with saline or other ingredients, in which patients suffering from rheumatism, etc., plunge the whole or portions of the body. Such are the mud-baths of St. Amand, or of Barbotan, in France.

Mud-fish. See *Dipnoi.*

Mudir (mū-dir), a Turkish official at the head of a canton or part of a liva under a kaimakam; in Egypt, the governor of a province or *mudîrîyeh.*

Mudstone (mud'stōn), a term originally applied to certain dark-gray fine-grained shales of the Silurian system, but now extended to all similar shales in whatever formation they may occur.

Muezzin (mö-ed'zin), or MUED'DIN, a Mohammedan crier attached to a mosque, whose duty it is to proclaim the *ezam* or summons to prayers five times a day—at dawn, at noon, 4 P. M., sunset, and nightfall. He makes his proclamation from the balcony of a minaret; and as this elevated position enables a person to see a good many of the private proceedings of the inmates of the neighboring houses, the post of muezzin is often entrusted to a blind man.

Muffle (muf'l), in chemistry, an arched vessel resisting the strongest fire, and made to be placed over cupels and tests in the operation of assaying.

Mufti (muf'ti), in the Turkish Empire, a religious officer who exercises the functions of an authoritative judge in matters of religion. The muftis are chosen from among the ulemas or doctors of the law, and the grand mufti or Sheikh-ul-Islam is the highest officer of the church and the representative of the sultan in spiritual matters.

Muggletonians (mug-l-tō'ni-ans), a sect that arose in England about the middle of the seventeenth century, of which the founders were John Reeve and Ludovic Muggleton, who claimed to have the spirit of prophecy. They affirmed themselves to be the 'two witnesses' of Rev. xi, 3.

Mugwump (mug'wump), a political term, coined in the United States during the Presidential campaign of 1884, and applied to the members of the Republican party who refused to support the party nominee. The word comes from the Algonquin Indian language. It is still used to designate those who are independent in politics or otherwise.

Muhalitch, or MUALITCH (mu-hälēch'), a town of Asiatic Turkey, about 15 miles south of the Sea of Marmora. It has a considerable trade with Constantinople. Pop. about 7000.

Muhlenberg (mū'lin-burg), HEINRICH MELCHIOR, born in Hanover in 1711. He was the organizer of the Lutheran church in the United States. He arrived in Philadelphia in 1742, to take charge of the German settlements from Nova Scotia to Georgia. He founded the first Synod in 1748. He advocated the use of the English language in the churches. Died in 1787.

Muhlenberg College, in Allentown, Pennsylvania, founded in 1867, and named in honor of Heinrich Melchior Muhlenberg. It has endowed funds amounting to $275,000.

Muhlhausen (mül-hou'zen), a town of Saxony, Prussia, 29 miles N. W. of Erfurt. The medieval town-hall is a noteworthy edifice. It has manufactures of textiles and cigars, and dyeing, tanning and brewing are carried on. Pop. 94,514.

Mühlheim, or MÜLHEIM, a town of Germany, in the Rhine valley, on the Ruhr, 14 miles north of Düsseldorf. It has cotton-spinning, weaving, and cloth manufactures, iron foundries, etc. Coal is mined here, and forms an important article of trade. Pop. (1905) 93,598.

Muir (mūr), JOHN, a Sanskrit scholar, born at Glasgow in 1810; died in 1882. He was educated at the university of his native city, and joined (1828) the East India Company's Civil Service, filling various offices until his retiral in 1853. His chief works are: *A Sketch of the Argument for Christianity Against Hinduism in Sanskrit Verse* (1839); *Original Sanskrit Texts on the Origin and History of the People of India, Their Religion and Institutions*, 5 vols. (1858-70); *Metrical Translations from Sanskrit Writers* (1878); and a translation of Kuenen's *Five Books of Moses*.

Muir, SIR WILLIAM, Arabic scholar and brother of the above, was born at Glasgow in 1819; educated at Glasgow and Edinburgh universities: entered the Bengal Civil Service (1837); attained various official positions until he became lieutenant-governor of the Northwest Provinces (1868); returned to England (1876), and became a member of the Council of India, an office which he held until he was appointed Principal of Edinburgh University in 1885. His writings include: *The Life of Mahomet* (1858-61, abridged edition 1877); *Annals of the Early Caliphate* (1883); *The Corân* (1877), and *Mahomet and Islam* (1884).

Mukden (mụk'den), MOUKDEN, or FUNG-TIEN-FU, a town of China, capital of Manchuria and of the province of Leao-Tong, about 380 miles N. E. of Peking. It is surrounded by a wall and has also a wall which encloses the government offices, palace, and other buildings, and it was the residence of the Manchu sovereigns before their conquest of China. Around it were fought in 1904-05 the greatest battles of the Russo-Japan war. Pop. about 250,000.

Mula (mö'lȧ), a town of Spain, province of and 21 miles west from Murcia. The principal manufacture is earthenware. Pop. 12,731.

Mulatto (mū-lat'tō), a person that is the offspring of parents of whom one is white and the other a negro. The mulatto is of a dark color tinged with yellow, with frizzled or woolly hair, and in features resembles the European more than the African.

Mulberry (mul'bėr-i), a fruit tree of the genus *Morus*, nat. order Moraceæ, akin to the Urticaceæ or nettles. The black or common mulberry (*Morus nigra*) is the only species worthy of being cultivated as a fruit tree. The fruit is used at dessert, and also preserved in the form of a syrup. The juice of the berries mixed with that of apples forms a beverage of a deep port wine color, called mulberry cider. The tree is probably not originally a native of Europe, though it thrives there. The white mulberry (*M. alba*) is the most interesting of the genus, on account of its leaves being used for food by silkworms. It grows to the height of 40 or 50 feet, with a trunk 2 or more feet in diameter. It came probably from China. The red mulberry (*M. rubra*) has fruit of a deep-red color, and is a valuable American tree. The paper mulberry (*Broussonetia papyrifĕra*) is a distinct genus, belonging originally to Japan, and now much cultivated in Europe. In Japan its bark is used in making paper, and its wood is highly valued for ornamental work.

Muldau. See *Moldau*.

Mule (mūl), the name applied to any animal produced by a mixture of different species, but specifically denoting the hybrid generated between an ass and a mare. The head of the mule is long and thin, its tail is bushy, and its mane short. (See *Hinny*.) The mule is employed as a beast of burden in Spain, Portugal, Italy, in the East, and in Spanish America. It unites the speed of the horse with the dogged perseverance of the ass, and is docile in temper when fairly treated.

Mule, a spinning-machine invented by Samuel Crompton, of England, in 1775, and so called from being a combination of the drawing rollers of Arkwright and the jenny of Hargreaves. In this machine the rovings are delivered from a series of sets of drawing rollers to spindles placed on a carriage, which travels away from the rollers while the thread is being twisted, and returns towards the rollers while the thread is being wound.

Muley Hafid, Sultan of Morocco. He was born in 1873. He headed the revolt in 1908 against the ruling Sultan Abdul Aziz, defeated him and succeeded to the sultanate.

Mull, an island on the west coast of Scotland, one of the Hebrides, belonging to Argyllshire, from which it is separated by the Sound of Mull and the Firth of Lorne; length 30 miles, breadth 29 miles. The island is for the most part mountainous, the highest point being Benmore, 3185 feet above sea-level. The

land in some parts is adapted for grazing, and there are numerous fresh water lochs. The only town is Tobermory. Pop. 4334.

Mullagatawny (m u l-a-ga-tą′ni), a soup which is made with fowl or meat cut into small pieces and mixed with rice, curry powder, etc.

Mullein (mul′en), the common English name for the plant *Verbascum Thapsus*, nat. order Scrophulariaceæ. The common mullein grows in old fields, roadsides, etc., and is a tall, rough plant. The flowers are yellow, almost sessile, and are disposed in a long cylindrical spike.

Müller (mûl′ĕr), Friedrich Max, a celebrated philologist, son of the German poet Wilhelm Müller, was born at Dessau in 1823; entered the University of Leipzig, where he studied Sanskrit under Brockhaus, and published (1844) the *Hitopadesa*, a collection of Sanskrit fables; proceeded then to Berlin, where he attended the lectures of Bopp and Schelling; continued his studies under Burnouf in Paris; went to England in 1846, and established himself at Oxford, where he was appointed successively Taylorian professor of modern languages (1854), assistant, and ultimately sublibrarian at the Bodleian library (1865), and professor of comparative philology (1868), a position which he (nominally) held to his death, though he practically resigned in 1875. He was a foreign member of the French Institute, and an LL.D. of Cambridge and Edinburgh. His numerous writings include an edition of the *Rig-Veda* (6 vols. 1849-74); *History of Sanskrit Literature* (1859); *Lectures on the Science of Language* (2 series, 1861 and 1864; many editions since); *Chips from a German Workshop* (4 vols. 1868-75); *On the Origin and Growth of Religion* (1878); *Selected Essays* (2 vols. 1882); *The Science of Thought* (1887); *Biographies of Words* (1888); *Natural Religion* (1889), and he was the editor of the series of *Sacred Books of the East*. He died in 1900.

Müller, Johann, a German physiologist, born at Coblenz in 1801; died in 1858. He studied medicine at Bonn, first becoming (1830) professor of physiology there, and then occupying the same position at Berlin from 1833 until his death. He was the author of *Elements of Physiology* (1837) and other works.

Müller, Karl Otfried, a German classical scholar, born in 1797; died at Athens in 1840. He studied at Breslau and Berlin; was appointed (1817) professor of ancient languages in the former city; obtained the chair of archæology at Göttingen in 1819; visited Italy, and then Greece, where he died. His best-known works are on the Dorians and the Etruscans, and his *History of the Literature of Ancient Greece* (1840).

Müller, Wilhelm, a German poet, born at Dessau in 1794; died in 1827. He studied at Berlin; volunteered in 1813 into the Prussian army, and was present at the battles of Lützen, Bautzen, Hanau and Culm; journeyed to Italy in 1819; and on his return was appointed teacher of Latin and Greek at Dessau. His chief poetical works are lyrical, and are very popular in Germany. He also published the *Library of the Seventeenth Century German Poets*. His son is the well-known Friedrich Max Müller. See above.

Müller, William James, landscape and figure painter, born in 1812 at Bristol, England, where his father, a German clergyman, was curator of the museum. He studied painting under J. B. Pyne, and first exhibited in the Royal Academy in 1833. In 1833-34 he visited Germany, Switzerland and Italy, and in 1838 Greece and Egypt; while in 1843 he accompanied, at his own expense, the Lycian expedition under Sir Charles Fellowes, bringing back many sketches and pictures of oriental life and scenery. He lived for some time in London, but returned to Bristol to die in 1845. His pictures, though not numerous, are of exceptional power and merit, among the more notable being the *Baggage Wagon*, *Dredging on the Medway* and *The Slave Market*, all exhibited in the Manchester collection of 1887, and the *Salmon-weir* at South Kensington.

Mullet (mul′et), a name common to two groups of acanthopterygian fishes, viz., the family Mugilidæ, or gray mullets; and the family Mullidæ, or red mullets. Naturalists, however, generally restrict the name to the former, designating the red mullets as sur-mullets. Of the true mullets the best-known is the common gray mullet (*Mugil capito*), found round the shores of the British islands, and in particular abundance in the Mediterranean. It grows to the length of 18 to 20 inches, and will sometimes weigh from 12 to 15 lbs. It has the habit of rooting in the mud or sand in search of food. Another species, also called gray mullet (*M. cephalus*), a native of the Mediterranean, is distinguished by having its eyes half covered by an adipose membrane. It weighs usually from 10 to 12 lbs., and is the

most delicate of all the mullets. A smaller species, the thick-lipped gray mullet (*M. chelo*) is common on the European coasts. Many other species, natives of India and Africa, are much esteemed as food.

Mullingar (mul-in-gär'), a market town of Ireland, capital of Westmeath County, on the Brosna, 50 miles N. W. of Dublin. It has a Roman Catholic cathedral and college, a courthouse, barracks, county jail, etc. Pop. 4500.

Mullion (mul'yun), a vertical division between the glass panes of windows, screens, etc., in Gothic architecture. Mullions are rarely found earlier than the Early English style. The term is also applied to the division between the panels in wainscotting.

Mulock, DINAH MARIA. See *Craik.*

Mulready (mul'red-i), WILLIAM, was born at Ennis, Ireland, in 1786; died in 1863. He became a student of the Royal Academy about 1800; exhibited *The Battle* (1808), *The Music Lesson* (1809), at the Royal Academy, and his *Idle Boys* (1815) secured his election as an associate of the Academy, while the following year he was elected an academician. He produced many other popular pictures.

Multan, or MOOLTAN' (möl'tän) a city of India, in the Punjab, the chief city and capital of a district of same name, is situated 4 miles from the Chenab, is partly surrounded by a wall, and is overlooked by a fortress of some strength occupied by European troops. The streets are mostly narrow and tortuous. It is one of the most ancient cities in India, and is the center of a large trade. Pop. 87,394.

Multiple (mul'ti-pl), in arithmetic, a number which contains another an exact number of times without a remainder; as, 12 is a *multiple* of 3, the latter being a *submultiple* or aliquot part. A *common multiple* of two or more numbers contains each of them a certain number of times exactly; thus 24 is a common multiple of 3 and 4. The *least common multiple* is the smallest number that will do this; thus 12 is the least common multiple of 3 and 4. The same expression is applicable to algebraic quantities.

Multivalves (mul'ti-valvz), the name given to such shell-fish or molluscous animals as possess shells which consist of more than *two* pieces. See *Mollusca.*

Mum, a malt liquor which derives its name from Mumme, a German, who first brewed it. It is made of the malt of wheat, with the addition of a little oat and bean meal, is of dark-brown color and sweetish taste.

Mummies (mum'ez), dead human bodies embalmed and dried after the manner of those taken from Egyptian tombs. An immense number of mummies have been found in Egypt, consisting not only of human bodies, but of various animals, as bulls, apes, ibises, crocodiles, fish, etc. The processes for the preservation of the body were very various. Those of the poorer classes were merely dried by salt or natron, and wrapped up in coarse cloths and deposited in the catacombs. The bodies of the rich and the great underwent the most complicated operations, and were laboriously adorned with all kinds of ornaments. Embalmers of different ranks and duties extracted the brain through the nostrils, and the entrails through an incision in the side; the body was then shaved, washed, and salted, and after a certain period the process of embalming (see *Embalming*), properly speaking, began. The whole body was then steeped in balsam and wrapped up in linen bandages; each finger and toe was separately enveloped, or sometimes sheathed in a gold case, and the nails were often gilded. The bandages were then folded round each of the limbs, and finally round the whole body, to the number of fifteen to twenty thicknesses. The head was the object of particular attention; it was sometimes enveloped in several folds of fine muslin; the first was glued to the skin, and the others to the first; the whole was then coated with a fine plaster. The Persians, Assyrians, Hebrews and Romans had all processes of embalming, though not so lasting as that of Egypt. The art also was practiced by the Guanches of the Canaries, the Mexicans, Peruvians, etc. Natural mummies are frequently found preserved by the dryness of the air.

Mummy of Penamen, priest of Amun Ra.–British Museum.

Mummy-wheat, a variety of wheat, the *Triticum turgidum compositum*, cultivated in Egypt, Abyssinia, and elsewhere; said falsely to be a variety produced from grains found in the case of an Egyptian mummy.

Mumps, a disease consisting in a peculiar and specific unsuppura-

tive inflammation of the salivary glands, accompanied by swelling along the neck, extending from beneath the ear to the chin. Children are more subject to it than adults.

München (mün*h*'ĕn). See *Munich*.

München-Gladbach. See *Gladbach*.

Münchhausen (mün*h*'hou-zn), KARL FRIEDRICH HIERONYMUS, BARON VON, a German officer, born in Hanover in 1720; died in 1797. He served in several campaigns against the Turks in the Russian service 1737-39. He was a passionate lover of horses and hounds, of which, and of his adventures among the Turks, he told the most extravagant stories; and his imagination finally so completely got the better of his memory that he really believed his most improbable and impossible fictions. *Baron Munchhausen's Narrative*, a small book of 48 pages, appeared in London in 1785. Two years after it was translated into German by Bürger, who naturally passed in Germany for the writer. The real author was Rudolf Erich Raspe (1737-94).

Muncie (mun'sē), a city of Indiana, capital of Delaware County, on the White River, 54 miles N. E. of Indianapolis. It has large manufactures of iron, steel, glass, machinery and various others, including the largest bending works in the country. Pop. 24,005.

Munden (mün'den), a town of Prussia, in Hanover, at the confluence of the Fulda and Werra, which here unite to form the Weser, 14 miles W. S. W. of Göttingen. Pop. 10,755.

Mungo (mun'gō), a material similar to shoddy, being made from old woolen fabrics torn up for remaking.

Mungo, ST., or KENTIGERN, the patron saint of Glasgow, an early apostle of the Christian faith in Britain, is said to have been the son of St. Theneu and a British prince, and was born at Culross about 514, and brought up by St. Serf, the head of a monastery there, whose favorite pupil he became. His name, Kentigern, was exchanged by the brethren of the monastery for *Mungo*, the beloved, on account of the affection they bore him. On leaving Culcross Kentigern founded a monastery on the banks of a small stream flowing into the Clyde, subsequently the site of Glasgow Cathedral. Having some troubles with the king of the Strathclyde Britons, he afterwards took refuge with St. David in Wales, and while in this country he founded a religious establishment under a follower named Asaph, which afterwards became the seat of the bishopric of St. Asaph. He returned to Glasgow, where he acquired a character of great sanctity, and died about 601. Numerous miracles were ascribed to him, and several legendary biographies are preserved.

Mungoose (mun'gös; *Herpestes griseus*), a species of ichneumon, otherwise known as the 'gray' or 'Indian' ichneumon. Being easily domesticated it is kept in many houses in Hindustan to rid them of reptiles and other vermin, as rats, mice, etc. It has been said that it neutralizes the poison of snakes, which it fearlessly attacks, by eating, during its contests with them, the *Ophiorhiza Mungos*, or snake-root; but its immunity is really due to the extreme celerity of its movements. It is of a gray color flecked with black, and about the size of a rat.

Munhall, a borough of Allegheny County, Pennsylvania, on the Pennsylvania Railroad. Pop. 5185.

Munich (mū'nik; German, *München*), the capital of Bavaria. It lies on an extensive but uninteresting plateau, about 1700 feet above sea-level, chiefly on the left bank of the Isar. The old town has a quaint and irregular character, but the new town, which has sprung up chiefly to the north and west, has a regular and imposing appearance, and altogether Munich is one of the finest towns in Germany. Vast improvements are due to the munificence of King Ludwig I. The royal palace forms a very extensive series of buildings chiefly in the Italian style, and contains many magnificent apartments and rich artistic and other treasures. Connected with it are the court church and the court and national theater, among the largest in Germany. The city is highly celebrated for its fine galleries of sculpture (Glyptothek) and painting (Old and New Pinakothek), and for various other important collections, such as that of the Bavarian national museum. The royal library (occupying a fine building in the Florentine style) has upwards of 1,000,000 volumes and 30,000 MSS., being thus one of the largest in Europe. The university is attended by some 2500 students, and has a library of 300,000 volumes. There is an academy of science, an academy of arts, and many fine churches, including the cathedral, founded in 1488. In addition to the public edifices, properly so-called, Munich is rich in monuments, which adorn its squares, gardens, and public promenades. The so-called English Garden (laid out by Count Rumford) is a fine park of 600 acres watered by two arms of the Isar. The industries are numerous, and in some

particular branches have acquired a high name. Among others may be mentioned painted glass and other artistic productions, mathematical, optical and surgical instruments, gold and silver lace, jewelry, glass, carriages, bells, musical instruments, etc. Munich is the seat of the high courts of legislature and of law, and of all the more important offices of the State. It was founded by Henry, duke of Saxony, in 962; taken by Gustavus Adolphus in 1632, by the French under Moreau in 1800, and by Napoleon in 1805. Pop. 595,053.

Municipality (mū-ni-si-pal'i-ti), a town or city possessed of certain privileges of local self-government, derived from incorporating charters granted by the State. Or the term may be applied to the corporation or body of persons in a town having the powers of managing its affairs. See *Borough*, *Burgh*, *Corporation*, *Election*, etc.

Municipal Government. The cities of the United States have hitherto been under political control, their governing officials and legislative bodies being largely made up of partisans of the great parties, and much corruption prevailing. Recently a new system, known as commission government, has been adopted in many cities, in which the power is lodged in the hands of a few officials, pledged to employ strict business methods, and subject to recall and dismissal if not satisfactory to the people. This somewhat assimilates the government of American cities to the methods pursued in many European cities.

Municipal League, an association for the reform or improvement of city government. Good government clubs, committees of citizens, etc., have been formed from time to time in American cities for this purpose. In Philadelphia the society for this purpose took the name of Municipal League, and in 1894, at a reform convention in that city, a National Municipal League was organized, which since then has held annual sessions in different cities, and has issued reports of interest and value in the education of civic voters in the subject of municipal reform.

Municipal Ownership, the ownership of public utilities in cities by the municipality. The movement in this direction has made considerable progress in Britain and some other parts of Europe, many cities there owning their chief utilities, including the street railways, and managing them in the interest of the citizens. This movement has made less progress in the United States, in which the cities have little ownership of or control over their street railways, the chief utilities held by any of them being the water and gas supply. But a somewhat active movement in the direction of fuller public control is in progress.

Munjeet (mun'jēt), or East Indian madder, a dye-stuff closely allied to the common madder, and used for producing similar colors, obtained from the roots of *Rubia cordifolia*, a plant grown very extensively in several parts of India.

Munkacs (mŭn'käch), a town of Hungary, on the Latorcza, 80 miles N. E. of Debreczin. In the vicinity are mines of rock-crystal. Pop. 13,640.

Munkacsy (mön-kå'chē), MIHALY, real name *Michael Liel*, a Hungarian genre and historical painter, born at Munkacs in 1846; studied at Gyula, Vienna, Munich, and Dusseldorf, and settled in Paris in 1872. Among his best-known pictures are *Last Day of a Condemned Man*, *Milton Dictating Paradise Lost*, *Christ Before Pilate* and *The Crucifixion*. He died in 1900.

Munster (mun'stir), the southwest province of Ireland, comprising the six counties of Clare, Cork, Kerry, Limerick, Tipperary and Waterford. Area, 9475 square miles. Pop. 1,075,095.

Münster (mŭn'stĕr), a town of Prussia, capital of the province of Westphalia, in a wide plain on the Aa, 78 miles N. N. E. of Cologne. It was once fortified, but the fortifications have been converted into promenades. The principal edifices are the cathedral, the church of St. Lambert, the town-house, the exchange, museum, theater, etc. The manufactures include woolen, linen, and cotton goods, etc. Münster was long governed by independent bishops, in whom a warlike was often much more conspicuous than a Christian spirit. The most memorable event in the history of the town occurred in 1532-35, when it fell into the hands of the fanatical Anabaptists. (See *Anabaptists*.) Pop. 44,060.

Münster, PEACE OF. See *Westphalia, Peace of*.

Muntjac (munt'jăk), a small species of deer, the *Cervŭlus muntjac*, found in British India, the Malay Peninsula, Sumatra, Java and Borneo, about 26 inches high at the shoulder. They are of solitary habits: the male has short horns, and they use their teeth effectually in self-defense.

Muntz's Metal (from its inventor, a Mr. Muntz of Birmingham), an alloy of 60 parts copper

and 40 parts zinc, used for sheathing ships and for other purposes.

Münzer (münt'sėr), THOMAS, a German fanatic, born about 1490; executed in 1525. He is said to have studied at Wittenberg. He preached at Zwickau in 1520, and at Prague in 1521, and he was connected with the early movements of the Anabaptists. He held a mystical belief in continuous divine revelation through dreams and visions, and promulgated the doctrine of community of goods. He collected a large number of peasant followers, who committed many outrages, but in 1525 Münzer was taken and executed.

Murad V (mö'rad), Sultan of Turkey, born in 1840. Son of Abdul-Medji, he succeeded to the throne on the forcible deposition of Abdul Aziz in 1876, but was deposed in the course of the same year on account of insanity, and was succeeded by his younger brother, Abdul Hamid. He died in 1904.

Muræna (mū-rē'na), a genus of apodal malacopterygious fishes, type of the family Murænidæ, often considered as belonging to the eel in form. They have no pectoral fins, and the dorsal and anal fins are very low and are united. The *M. helena*, or murry, is found in the Mediterranean; it grows to the length of between 4 and 5 feet, and even more, and is highly esteemed for the table.

Mural Circle (mū'ral), an astronomical instrument consisting of a telescope attached to a vertical brass circle which turns upon an axis passing through a stone pier. The brass circle revolves exactly in the plane of the meridian, and is carefully divided into degrees and minutes. Attached to the stone pier, and at equal distances apart are six microscopes for the purpose of viewing the graduated circle and determining exactly its position and consequently that of the telescope. It is regarded as the principal fixed instrument in all the great public observatories. Its chief use is to measure angular distances in the meridian, and so to determine the declination of a star, or its distance from the celestial equator. The right ascension of a star being given by the transit instrument (which see), and its declination by this, its exact position is determined.

Murat (mū-rä), JOACHIM, a French marshal, and for some time King of Italy, the son of an innkeeper at Cahors, born in 1771; died in 1815. He served in the constitutional guard of Louis XVI; then entered the 12th Regiment of mounted chasseurs; rose by his zealous Jacobinism to the rank of lieutenant-colonel; was afterwards removed as a terrorist, and remained without employment till his fate placed him in connection with Bonaparte, whom he followed to Italy and Egypt, becoming general of division in 1799. In 1800 he married Caroline, the youngest sister of Bonaparte. He was present at the battle of Marengo, and in 1804 was made marshal of the empire, grand-admiral, and prince of the imperial house. His services in the campaign of 1805 against Austria, in which he entered Vienna at the head of the army, were rewarded in 1806 with the grand-duchy of Cleves and Berg. In the war of 1806 with Prussia, and of 1807 with Russia, he commanded the cavalry, and in 1808 he commanded the French army which occupied Madrid. He anticipated receiving the crown of Spain, Charles IV having invested him with royal authority; but Napoleon, who destined Spain for his brother Joseph, placed him on the throne of Naples, July 15, 1808. He shared the reverses of the Russian campaign of 1812, and in 1813 again fought for Napoleon, whose cause he deserted after the battle of Leipzig. He took up arms again in 1815 for Napoleon; but being defeated by Generals Neipperg and Bianchi near Tolentino, May 2 and 3, he was forced to leave Italy, and took refuge in Toulon. After the overthrow of Napoleon he escaped to Corsica, and set sail for the Neapolitan territory with a view to recover his kingdom. He landed at Pinzo on October 8, but was immediately captured, tried by a court-martial, and shot.

Muratori (mö-ra-tō'rē), LUDOVICO ANTONIO, an Italian historian, born in 1672; died in 1750. He was successively librarian at Milan and ducal archivist and librarian at Modena. He made many valuable contributions to Italian history, notably *Rerum Italicarum Scriptores ab Anno 500 ad 1500* (twenty-seven vols., folio, 1723-51), *Antiquitates Italicæ Medii Ævi* (six vols., 1738-42), *Annali d'Italia*, etc.

Murchison (mur'chi-sun), SIR RODERICK IMPEY, a Scottish geologist, born at Tarradale, in Rossshire, in 1792; died in 1871. He studied at the military college, Great Marlow, and at Edinburgh University; joined the army and served in the Peninsular war (1807-08). Afer the peace of 1815 he retired from the army and devoted himself to scientific pursuits, particularly geology, spending many years in the investigation of various parts of England, Scotland, and the Continent. In 1831-32, and again in 1842-43, he was elected president of the Geological Society. By a comparison of specimens of the rocks of Australia with

the auriferous rocks of the Ural Mountains, which he had personally examined, he was led, so early as 1845, to predict that gold would be found there. He was one of the founders and most active members of the British Association for the Advancement of Science, and he presided over the meeting of that association at Southampton in 1846. In 1855 he was appointed director of the Geological Survey and of the Royal School of Mines. He was several times elected president of the Royal Geographical Society; after 1862 he was by general consent always reëlected, and he remained president of that society till within a few months of his death. He was made a baronet in 1863. His chief works are *Siluria*, *The Geology of Russia*, and numerous contributions to the transactions of the learned societies. He endowed the chair of geology in Edinburgh University.

Murcia (mụr'thi-ȧ), a city of Southern Spain, capital of the ancient kingdom and modern province of same name. The city is walled, and the streets are generally broad, straight, and well paved. Among the public buildings the most important is the cathedral, whose principal façade, a combination of Corinthian and Composite architecture, produces a fine effect. It was begun in 1353. The episcopal palace is one of the finest in Spain. There are manufactures of woolens, silk stuffs, linens, etc. Pop. 111,539.—The province formed part of the ancient kingdom of Murcia; area 4453 square miles; pop. 577,987. A considerable portion is composed of ranges of hills, containing mines of copper, iron, lead, and silver, and quarries of marble. There are also extensive plains, which are rendered amazingly fruitful by irrigation. The ancient kingdom, after passing through the hands of the Romans and Goths, was conquered by the Moors in 713, and continued under them till 1240, when it became a dependency of Spain.

Murder (mur'dėr), the act of unlawfully killing a human being with premeditated malice, the person committing the act being of sound mind and discretion, and the victim dying within a year and a day after the cause of death administered. In Britain it is the law that every person convicted of murder shall suffer death as a felon. In the United States the law recognizes degrees in murder, and in France and some other civilized nations 'extenuating circumstances' are taken into consideration.

Murdoch (mur'dok), James Edward, actor, was born at Philadelphia in 1811 and made his first stage appearance in that city in 1826. He was versatile and played many leading parts, being for years a favorite comedian. He made his first appearance in tragedy in *Hamlet*, in 1845. During the Civil war he gave readings for the benefit of the Sanitary Commission. He was the author of several text-books on elocution. He died in 1892.

Murdoch (mur'do*h*), William, an inventor, born near Auchinleck, Ayrshire, in 1754. His father was a millwright and miller, and under him William worked till he was twenty-three years of age. He then went to Birmingham, where he obtained employment in the engineering establishment of Boulton & Watt. A demand for Watt's engines was fast rising in the Cornish mines, and Murdoch was soon sent thither to superintend the erection and fittings of these. At Redruth, in 1784, he constructed a model high-pressure engine to run on wheels, the precursor of the modern steam locomotive; a year later he invented the oscillating engine, the system of which is still in use; and the rotary engine with sun-and-planet circular motion is also his invention. He made many improvements on Watt's engine on the lines of economizing steam and securing simplicity. About the end of the century he was made manager of the works of Boulton & Watt, being afterwards admitted as a partner. In 1803 he constructed a steam-gun; and some time later produced the well-known cast-iron cement made of iron-borings and sal-ammoniac. In 1815 he introduced the hot-water apparatus which, with certain slight modifications, is now so extensively used for heating large buildings and conservatories. Various other inventions of his might be mentioned; but his work as a gas inventor remains his most conspicuous achievement. In 1792 he first lighted his offices and cottage at Redruth with coal gas but it was not till 1798 that he constructed his first extensive apparatus at Birmingham for the making, storing, and purifying of gas, with a view to the supply of factories. Not long after this the offices at Soho were lighted with gas, and the new illuminant was brought prominently before public notice in 1802, when the exterior of the factory was lighted up in celebration of the Peace of Amiens. His great invention was never patented. He retired from business in 1830, and died in 1839.

Mure (mūr), William, historian, son of William Mure, of Caldwell, an estate on the borders of Renfrewshire and Ayrshire, was born at Caldwell, Renfrewshire, in 1799; died in 1860. He was educated at Westminster School, the Uni-

versity of Edinburgh, and the University of Bonn. In 1824 and 1825 he contributed to the *Edinburgh Review* articles on Spanish literature and other subjects. In 1829 he published *Brief Remarks on the Chronology of the Egyptian Dynasties;* in 1832 *A Dissertation on the Calendar of the Zodiac of Ancient Egypt;* in 1842 *Journal of a Tour in Greece and the Ionian Islands.* In 1846 he was elected member of parliament for Renfrewshire, for which county he continued to sit till 1855, when he resigned in consequence of ill health. In the winter of 1847-48 he was elected lord-rector of the University of Glasgow. His leading work, which was left unfinished at his death, *A Critical History of the Language and Literature of Ancient Greece,* was published in five volumes (1850-57).

Murex (mū'reks), a genus of gasteropod molluscs resembling the whelk; shell spiral, rough, with three or more ranges of spines simple or branched. Murices are remarkable for the beauty and variety of their spines. They were in high esteem from the earliest ages on account of the purple dye that some of them yielded.

Murfree (mur'frē), Mary Noailles, novelist, born in Murfreesboro, Tennessee, in 1856. She wrote under the pseudonym of Charles Egbert Craddock, her subjects having largely to do with the mountaineers of East Tennessee.

Murfreesboro (mur'frēz-bo-ro), a city of Tennessee, capital of Rutherford County, 30 miles S. E. of Nashville. It has flour and planing mills, tanneries, canneries, and cotton-gin works. It was the capital of Tennessee from 1819 to 1826, and nearby was fought one of the great battles of the Civil war (also called Battle of Stone River), December 31, 1862, to January 2, 1863, between the Federals under General Rosecrans and the Confederates under General Bragg. Pop. 4679.

Murger (mûr-zhār), Henri, born at Paris in 1822; died in 1861. He lived a life of extreme privation; formed an informal club or society of unconventional young artists and authors similarly situated which was named 'Bohemia,' and the associates 'Bohemians'—a name famous in general literary history. He contributed a great mass of 'copy' to numerous periodicals, and at last made a reputation by his *Scènes de la Vie de Bohême.* He also published two volumes of poetry, *Ballades et Fantaisies,* and *Les Nuits d'Hiver;* and wrote dramas for the Luxembourg theater, and tales, etc., for the *Revue des Deux Mondes.*

Murghab (mör-gäb'), a river of Asia, which rises in the mountains of Northern Afghanistan, and after a course of 400 miles loses itself in the sands surrounding the oasis of Merv.

Muriatic Acid (mū-ri-at'ik), the older name for hydrochloric acid (which see).

Muridæ (mū'ri-dē), the family of animals which includes the mice and rats.

Murillo (mų' r ē l' y ō), Bartolomeo Esteban, the greatest of Spanish painters, was born at Seville in 1618. He received his first instruction in art from his relation, Juan del Castillo. In 1642 he visited Madrid, and was aided by Velasquez, then painter to the king, who procured him permission to copy in the Royal Galleries. Murillo returned to Seville in 1645, where he commenced that great series of works which have now made his name so glorious. He married a lady of fortune in 1648, which much aided his personal influence, and he succeeded in establishing an academy of the arts at Seville in 1660, and acted as president the first year. He died at Seville in

Murillo.

1682, in consequence of a fall from a scaffolding at Cadiz, where he was engaged in the church of the Capuchins, painting a large altar-piece of St. Catherine. In his early career he painted many pictures of humble life with much charm of grace and humor; but his most celebrated pictures are of a later period, and treat religious subjects with a mingled idealism and realism and a richness of coloring which has seldom been attained. Soon after his marriage he gave up his early cold (*frio*) style, and adopted his warm (*calido*) style. He obtained the

JACOB'S LADDER
Painting by *Murillo.*

name of 'Painter of the Conception' from his fondness for the subject of the Immaculate Conception. About 250 of his pictures are preserved in British and foreign galleries, and in Spanish churches.

Murom (mö'rom), a town in Russia, in the government of Vladimir, 75 miles southeast of the town of Vladimir, on the left bank of the Oka, one of the oldest towns in Russia. Pop. 12,874.

Murphy (mur'fi), ARTHUR, a miscellaneous writer, born in Ireland in 1727; died in 1805. He was the author of *The Greeian Daughter* and other plays, highly popular in their day. He published also translations of Tacitus and Sallust, a *Life of Garriek*, *Essay on Johnson*, etc.

Murphysboro (mur'fēs-bo-ro), a city, capital of Jackson Co., Illinois. on the Big Muddy River, 57 miles N. of Cairo. Coal and lead are mined near this place, and it has foundries, machine shops, etc. Pop. 7485.

Murrain, (mur'in), a name given in general to any widely prevailing and contagious disease among cattle, though in different localities it is also used as the name of some specific disease.

Murray (mur'ri), the largest river in Australia, rises in the Australian Alps about 36° 40′ S. and 147° E., its sources being partly in New South Wales, partly in Victoria; flows for a long distance westward, forming the boundary between the two colonies; then passes into South Australia, where it takes a southern direction, and falls into the sea through a large shallow sheet of water called Lake Alexandrina. There is a sand bar at the mouth which impedes navigation, but small steamers ascend the river as high as Albury, 1700 miles from its mouth. Its chief tributaries are the Murrumbidgee, the Darling and the Lachlan. The Darling before its junction with the Murray may even be considered the main stream.

Murray, DAVID CHRISTIE, novelist, born in 1847; commenced life on the Birmingham press, was connected with London newspapers, and acted as special correspondent during the Russo-Turkish war. He then took to fiction, and wrote a number of popular novels, among them *Aunt Raehel*, *The Weaker Vessel*, *The Way of the World*, *The Making of a Novelist*, *The Bishop's Amazement*, etc. He died in 1907.

Murray, EARL OF. See *Moray.*

Murray, JOHN, an eminent London publisher, born in 1778 (father's name MacMurray); died in 1843. He began business when quite young, early attained success, and became the friend of as well as publisher for some of the chief writers of the day, including Byron, Moore, Rogers, Campbell, Crabbe, Washington Irving, etc. He started the *Quarterly Review* in 1809. The well-known *Handbooks for Travelers* were originated by his son.

Murray, LINDLEY, grammarian, born in Pennsylvania, of Quaker parents, in 1745; died in 1826. About the age of twenty-one he was called to the bar, and acquired an extensive practise. On the outbreak of the Revolutionary war he retired to the country, but four years after engaged in mercantile pursuits, and by the close of the war had realized a competence. In 1784 he went to England, and purchased the estate of Holdgate, near York, where he passed the remainder of his life. He wrote, besides his well-known *English Grammar*, several works on education and morals.

Murrine (mur'ēn; or MURRHINE) Vases of (*vasa murrhina*), splendid antique vessels which were equally distinguished for the costliness of their material and the beauty of their execution. They were brought, according to Pliny, from Carmania, now Kerman in Persia, and bore an immense price. Vases of this ware were used in Rome as wine cups, and were believed to have the quality of breaking if poison were mixed with the liquor they contained. There is doubt about the material of these vases, though the probability is they were made of fluorspar or of the fluoride of calcium.

Murrumbidgee (mur-um-bid'jē), a large river of Australia, in New South Wales, rising in the great Dividing Range, and entering the Murray after a westward course about 1300 miles; chief tributary, the Lachlan.

Murshidabad, (mör-shed-ä-bäd), a or MOORSHEDABAD city of India, Bengal, capital of a district of same name, on the left bank of the Bhagirathi. It was the capital of Bengal till 1772, since which time its historical importance has departed. The city, with its suburb Azimganj on the opposite bank of the river, is the chief center of trade and manufacture in the district. The industries include an extensive silk industry, the embroidery of fancy articles with gold and silver lace, ivory carving, and the making of musical instruments. Its population in 1825 was still about 150,000. In 1901 it had fallen to 15,168. Azimganj had 13,383.

Murten. See *Morat.*

Murzuk. See *Mourzouk.*

Musaceæ (mū-zā'se-ē), a nat. order of endogenous plants, of which *Musa* is the typical genus. It includes the abaca or manila hemp, the banana and the plantain.

Musæus (mū-sē'us), an ancient Greek poet, almost fabulous, said by some to be the son of Eumolpus and Selene, by others, of Linus or Orpheus. He is credited with the mystic and oracular verses of the Eleusinian and other mysteries. The ancients attribute to him many works, of which some verses only have come down to us as quotations in Pausanias, Plato, Aristotle, etc. A later Musæus, who probably lived four or five centuries after Christ, is the author of an erotic poem of the loves of Hero and Leander.

Musäus (mu̧-zä'u̧s), JOHANN KARL AUGUST, German author, born in 1735; died in 1787. He studied theology; was master of the pages at the Weimar court, and in 1770 was appointed professor in the gymnasium at Weimar. Among his writings, which are characterized by humor, simplicity, and a kindly satire, are *Der Deutsche Grandison* ('The German Grandison'), *Physiognomische Reisen* ('Physiognomic Travels'), *Volksmärchen der Deutschen*, ('German Popular Tales'), and a series of tales under the title *Straussfedern* ('Ostrich-feathers').

Musca (mus'ka), a Linnæan genus of dipterous insects, including the flies; now expanded into a family (Muscidæ).

Muscæ Volitantes (mus'se vol-i-tan'tēz; lit. 'floating flies'), in physiology, the name given to ocular spectra which appear like motes or small bodies floating before the eyes. One class of these specks are a common precursor of amaurosis (which see); but another class are quite harmless.

Muscardine (mus-kär'dēn), a contagious disease in silkworms caused by a fungus.

Muscat (mus'kat), or MASKAT, the chief city of the sultanate of Omán, or Muscat, a seaport on the Indian Ocean, near the east angle of Arabia. The town stands in a hollow, under cliffs 400 feet or 500 feet high. Large buildings are few, and the sultan's palace (a plain edifice), the governor's house, and a few minarets alone rise above the humble mass of flat-roofed huts or houses. The streets are extremely narrow, and the town is one of the hottest places in the world. It is an important center of trade, exporting coffee, pearls, mother-of-pearl, dye-stuffs, drugs, etc., and importing rice, sugar, piece goods, etc. Pop. of town and suburbs estimated at 60,000.

Muscatel (mus-kå-tel'), or MUSCADEL, a term for various sweet, strong, and fragrant wines.

Muscatine (mus-kå-tēn'), a city of Iowa, on the Mississippi, at the apex of what is called the Great Bend, 30 miles below Davenport, and in connection with an extensive network of railways. It has varied and important industries, including large saw and planing mills and many others. Melons, sweet potatoes and garden produce are raised in the vicinity and shipped widely over the West. Pop. 16,178.

Muschelkalk (mu̧sh'el-kålk), a compact hard limestone of a grayish color found in Germany. It is interposed between the Bunter sandstone, on which it rests, and the Keuper variegated marls, which lie over it, and with which at the junction it alternates, thus forming the middle member of the Triassic system as it occurs in Germany. In England the Keuper rests immediately on the Bunter. It abounds in marine organic remains, its chief fossils being encrinites, ammonites and terebratulæ.

Musci. See *Moss.*

Muscidæ (mus'si-dē), a family of two-winged flies, of which the common house-fly (*Musca domestica*) is a familiar example.

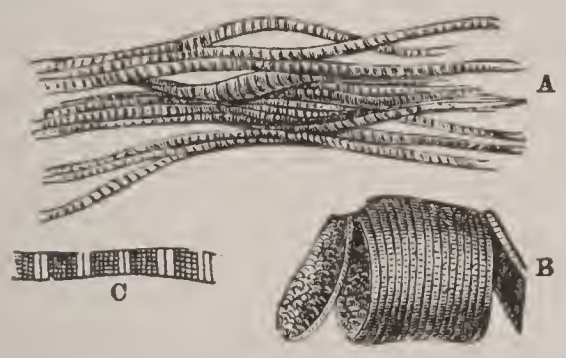
Muscle and Muscular Motion

(mus'l). The name *muscle* is applied to those structural elements or organs in animals which are devoted to the production of movements, either of a part of the body, or of the body as a whole. They consist of fibers or bundles of fibers, susceptible of contraction and relaxation, en-

A Striped Muscular Fiber with its Sheath.

closed in a thin cellular membrane. Muscles are composed of fleshy and tendinous fibers, occasionally intermixed, but the tendinous fibers generally prevail at the extremities of the muscle, and the fleshy ones in the belly or middle part of it. When the fibers of a muscle are placed parallel to each other it is called a *simple*

or *rectilinear* muscle; when they intersect and cross each other they are called *compound.* When muscles act in opposition to each other they are termed *antagonist;* when they concur in the same action they are called *congenerous.* Muscles are also divided into *voluntary* and *involuntary* muscles, the former being those whose movements proceed from an immediate exertion of the will, as in raising or depressing the arm, bending the knee, moving the tongue, etc., while the latter are beyond this control, being the agents in the contraction of the heart, arteries, veins, absorbents, stomach, intestines, etc. When examined under the microscope the fibers of the voluntary muscles (as also those of the heart) are seen to be marked by minute transverse bars or stripes, while those of the involuntary are smooth and regular in appearance. The former is therefore called *striped* or *striated* muscle, the latter *unstriped, nonstriated,* or *smooth* muscle. The great property of muscular tissue is the power of re-



Muscular Fiber separated—A into fibrillæ and B into discs. C is a highly magnified portion of a fibril.

sponding when irritated. The response is in the form of contraction, that is, when the muscle is irritated or stimulated it responds by shortening itself, so that its ends are brought nearer and it becomes thicker in the middle, its inherent elasticity making it capable of returning to its previous length when the stimulation is withdrawn. By these contractions the muscles are able to do work. The usual stimulation is by nervous action (see *Nerve*), but mechanical means, such as pinching, pricking, etc., electricity, heat and chemicals also cause irritation. All the muscles are connected with bones not directly but through the medium of tendons. A tendon presents the appearance of a white glistening cord, sometimes flat, but often cylindrical and of considerable thickness. The mass of flesh composing the muscle is called the *belly* of the muscle. One end is usually attached to a bone more or less fixed, and is called the *origin* of the muscle. The other end is attached to the bone meant to be moved by the contraction of the muscle, and is called the *insertion* of the muscle. Involuntary muscle consists of spindle-shaped cells having an elongated nucleus in the center. They are united in ribbon-shaped bands, and respond much less rapidly than the voluntary to irritations, and the wave of contraction passes over them more slowly.

Muscogees (mus-kō′jēz), the Creek Indians. See *Creeks.*

Muscovado (mus-ko-vā′dō), unrefined sugar; the raw material from which loaf and lump sugar are procured by refining. Muscovado is obtained from the juice of the sugar-cane by evaporation and draining off the liquid part called *molasses.*

Mus′covy (from *Moscow*), a name often applied to Russia.

Muscovy Duck. See *Musk-duck.*

Muses (mūs′ez), in the Greek mythology, the daughters of Zeus and Mnemosynē, who were, according to the earliest writers, the inspiring goddesses of song, and according to later ideas divinities presiding over the different kinds of poetry, and over the sciences and arts. Their original number appears to have been three, but afterwards they are always spoken of as nine in number, viz.—*Clio,* the muse of history; *Euterpē,* the muse of lyric poetry; *Thalīa,* the muse of comedy, and of merry or idyllic poetry; *Melpomĕne,* the muse of tragedy; *Terpsichŏrē,* the muse of choral dance and song; *Erăto,* the muse of erotic poetry and mimicry; *Polymnia* or *Polyhymnia,* the muse of the sublime hymn; *Urania,* the muse of astronomy; and *Calliŏpe,* the muse of epic poetry.

Museum (mū-zē′um), a building or apartments used as a depository of articles which relate to art, science, or other fields of human interest, and where the contents are arranged for inspection. Collections of this kind are numerous in all civilized parts of the world, usually open to the public for instruction or recreation. Of these Britain has an admirable example, the most famous in the world, in the British Museum, and a second of much repute is the South Kensington Museum. Others of leading importance in Europe are the museums of the Vatican in Rome, of the Louvre in Paris, and those of St. Petersburg, Berlin, Vienna, Dresden, Munich and other cities. In the United States the National Museum at Washington is a richly-filled institution. Others of importance are the Peabody Museum at Harvard, the American Museum of Natural History at New York, the Peabody

Museum at Yale College, the museum of the Academy of Natural Sciences and the Commercial Museums at Philadelphia, the museums of the Boston Society of Natural History, and the California Academy of Sciences, the Field Columbian Museum at Chicago, and others elsewhere. Collections of art and other objects are equally numerous, though not usually known as museums.

Mushroom (mush′röm), the common name of numerous cryptogamic plants of the nat. order Fungi. Some of them are edible, others poisonous. The species of mushroom usually cultivated is the *Agaricus campestris*, or eatable agaric, well known for its excellence as an ingredient in sauces, especially ketchup. (See *Agaric.*) Mushrooms are found in all parts of the world, and are usually of very rapid growth. In some cases they form a staple article of food. In Terra del Fuego the natives live almost entirely on a mushroom, *Cyttaria Darwinii;* in Australia many species of *Bolētus* are used by the natives, and the *Mylitta australālis* is commonly called native bread. *Mushroom spawn* is a term applied to the reproductive mycelium of the mushroom.

Music (mū′zik), any succession of sounds so modulated as to please the ear; also the art of producing such melodious and harmonious sounds, and the science which treats of their properties, dependencies and relations. Sound is conveyed through elastic media, as the atmosphere or water, by undulations, which may be generated in the medium itself, as by a flute or organ pipe, or transmitted to it by the vibrations of violin or pianoforte strings or the reeds of a wind instrument. When the vibrations are fewer than 16 in a second or more than 8192 the sound ceases to have a musical character. The *pitch* or relative height of a tone is determined by the number of vibrations in a given time, the lower numbers giving the grave or deep tones, the higher numbers the acute or shrill tones. The loudness of a tone is determined by the largeness of the vibrations, not their number. The note or musical sound called middle C on the pianoforte is usually assumed by theorists to be produced by 512 vibrations per second, and this was long the pitch recognized in practice as the standard or *concert pitch* useful for the guidance of all musicians. The perpetual striving after increased brilliance of tone led, however, to a gradual heightening of the pitch, and in the course of a century the middle C in France had become 522 vibrations, while in England and Germany it was somewhat higher. Of late years there has been a movement among European musicians to lower the pitch to about the French standard, and this lower pitch has been now adopted by many foreign nations.

A note produced by double the number of vibrations required to produce any given note will be found to be in a perfect *unison* with it though higher in pitch. Between two such notes there is a gradation by seven intervals in the pitch of tone, more agreeable (at least to modern European ears) than any other, the whole forming a complete scale of music called the *diatonic scale.* The space between the notes sounding in unison is termed an *octave*, and the note completing the octave may become the *keynote* of a similar succession of seven notes, each an octave higher or double the pitch of the corresponding note in the first scale. These seven notes of the diatonic scale are designated by the first seven letters of the alphabet, and each note bears a fixed ratio to the keynote in respect of pitch as determined by the number of vibrations. Thus in the case of a keynote obtained from a vibrating string, its octave is produced by halving the string, which vibrates twice as fast in a given time as the whole string, and the other notes may be obtained by applying reciprocally the ratios given below to the length of the string.

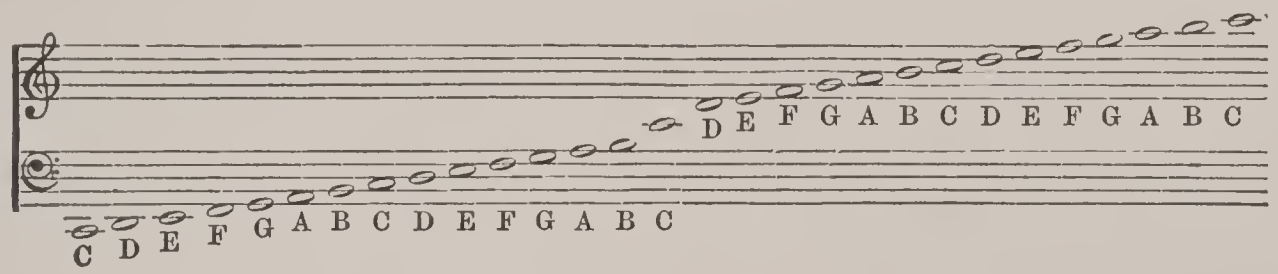
Taking C or Do for our fundamental note we have for our scale—

C	D	E	F	G	A	B	C	D	E	F	G	A	B	C,	etc. (Scale in key of C major)
or Do	Re	Mi	Fa	Sol	La	Si	Do	Re	Mi	Fa	Sol	La	Si	Do,	etc.
1	$\frac{9}{8}$	$\frac{5}{4}$	$\frac{4}{3}$	$\frac{3}{2}$	$\frac{5}{3}$	$\frac{15}{8}$	2								(Ratio to keynote).

The scale may be extended up or down so long as the sounds continue to be musical. In order to allow reference to be made to the various degrees of scales without reference to the key in which they are pitched the tones composing the octave are known in their ascending order as (1) *tonic* or keynote, (2) *supertonic*, (3) *mediant*, (4) *subdominant*, (5) *dominant*, (6) *superdominant* or *submediant*, (7) *leading note* or *subtonic*, (8) *final note.* The tonic, the subdominant, and the dominant are the governing or emphatic notes of the scales. In the diatonic scale the various notes proceed from the keynote by five *tones* and two *semitones;* the semitones (the smallest intervals recognized in musical notation)

occurring between the 3d and 4th and 7th and 8th notes in the scale. The first four and last four notes, therefore, form a natural division of the octave into two 'tetrachords,' each consisting of two tones and a semitone.

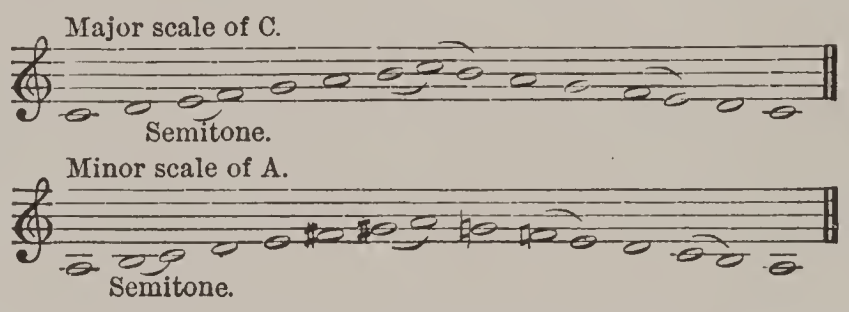
Every sound employed in the art of music is represented by characters called notes on a *staff*—that is, five equidistant horizontal lines on or between which the notes are placed. A note represents a higher or a lower sound according as it is placed higher or lower on the staff. When any note is higher or lower in pitch than can be placed upon the staff short lines called *ledger lines* are added above or below the staff to indicate the relation of the note to those on the staff. As, however, the multiplication of ledger lines is liable to become embarrassing to the eye, musicians have endeavored to overcome the difficulty by the use of more than one staff. The staves are the *bass*, *mean*, and the *treble*, but the second is now seldom used. The treble staff, which contains the upper notes, is distinguished by a character called a G or treble *clef* 𝄞 the bass by a character called the F or bass clef 𝄢 and the mean by a character called the C or mean clef 𝄡. The treble and bass clefs only are required for keyed instruments of the pianoforte kind, and when a staff is wanted for each hand they are joined by a brace, the upper staff carrying the notes generally played by the right hand and the lower those played generally by the left, as follows:—



It will be seen that the steps in every diatonic scale must correspond to those of the scale of C, in that the notes composing it stand in the same fixed ratio to the keynote of the scale. In selecting another keynote than C, however, it is necessary to modify some of the natural notes by the insertion of what are called *sharps* or *flats* in order to preserve the required relation and sequence of the intervals (the tones and semitones in their due relative positions) and so produce the major musical progression. The sharp (♯) placed before a note raises the pitch by a semitone, the flat (♭) lowers it by a semitone. A sharp or flat placed at the beginning of a staff affects every note upon the line which it dominates, unless the contrary be indicated by the sign of the *natural* (♮), which restores the note to which it is attached to its normal pitch. In the model diatonic scale given it has been pointed out that there is an interval of a tone between every note, except the 3d and 4th (E and F) and 7th and 8th (B and C), when the interval consists of a semitone. Now if we wish to make G the keynote it is clear that without some contrivance the notation of the scale from G to its octave would throw one of the semitones out of its place—namely, that between E and F, which, instead of being, as it ought to be, between the seventh and eighth, is between the sixth and seventh. It is obvious then that if we raise the F a semitone we shall restore the interval of the semitone to a position similar to that which it held in the key of C. If D be taken as a keynote we shall find it necessary to sharpen the C as well as the F in order to bring the semitones into their proper places. Still proceeding by fifths, and taking A as a keynote, a third sharp is wanted to raise G. We may proceed thus till we reach the scale of C sharp, with seven sharps, which is, however, rarely used. This series of scales with sharps is obtained by taking the dominant, first of the model scale as the keynote and then of the others in succession, and sharpening the fourth of the original scales to make it the seventh of the new. Another series is obtained by taking the subdominant of the model scale as the keynote and lowering its seventh a semitone, making it the fourth of the new scale, or scale of F. Taking the subdominant of the scale (B) as the keynote we require to flatten the E in addition to the B, and so on until we have lowered all the tones in the scale a semitone.

Besides the forms of the diatonic scale, which have an interval of two tones be-

tween the tonic and the third, and is called the *major scale*, there are *minor scales* of which the most important kind has an interval of a tone and semitone between its tonic and third, the seventh note being sharpened so as to form a leading note. In the ascending scale, too, the harsh interval of the second between this leading note and the one immediately below it is frequently avoided by sharpening the lower note. In the descending scale the sharps are removed, and the scale is identical with the major, beginning at its sixth and descending an octave. See example.



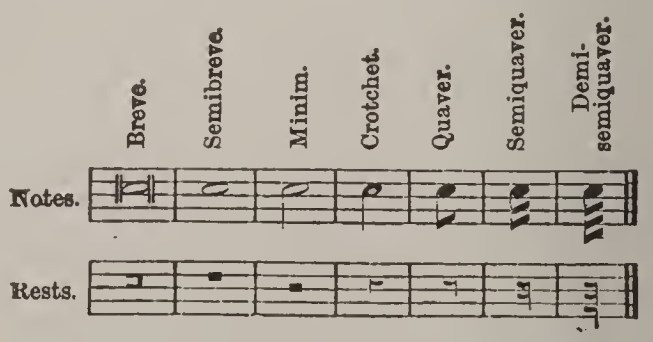
Major and minor scales which, like those given in the example, have the same key signature, are called *relative*. Thus, the major scale of G has for its relative minor the scale of E minor; the major scale of D has for its relative minor the scale of B minor; and so on. Each minor scale is also called the tonic minor to the major scale on the same keynote. The tonic minor scale to C major is C minor. One major scale is also said to be related to another when it is raised from its dominant or its subdominant: thus the scales of G and F are held to be nearly related to that of C.

There is still another kind of scale, called the *chromatic* (Greek *chrōma*, color), because, like colors in painting, it embellishes the diatonic by its semitones. It consists of thirteen notes, and usually ascends by sharps and descends by flats.

Intervals in music (*i.e.*, the distance from any one note to any other) are reckoned always upwards and inclusively by the number of names of notes they contain, both limits to the interval being counted. Thus C to E is a third, both C and E being counted in the interval. They are known as major or normal when they are such as would be found in any major scale; as minor when the interval consists of a semitone less than the corresponding major interval; as augmented when consisting of a semitone more than major; as diminished when a semitone less than minor; and as simple or compound according as they fall within or exceed the compass of an octave.

Hitherto notes have been referred to only as representatives of the various sounds with reference to their pitch and distances from each other; but each note serves also to mark the relative duration of the sound it represents. Below are given the names and forms of the notes commonly in use, each in succession being half the duration of the note preceding it.

The stems of the notes may be written upwards or downwards as convenient. In connection with these notes other signs are used still further to indicate duration. A dot placed after a note lengthens it by one-half, two dots by three-fourths. Instead of the dot a note of its value may be written, and a curve, called a *tie*, written over it and the preceding note. Sometimes three notes of equal value have to be played in the time of two, in which case the figure 3 with a curve thrown over it is written above or below the notes. Two *triplets* (as this group is called) may be joined, and the figure 6 surmounted by a curve written over them; they are then performed in the time of four notes of the same form. A sensible interval of time often occurs between the sounding of two notes; this is represented by characters called *rests*, each note having a corresponding rest. A dot may be added to a rest in the same manner as to a note, to indicate an addition of a half to its length. See the example just given, which shows the rests in connection with their corresponding notes.



Every piece of music is divided into portions equal in time, called *measures*, which are separated from each other by vertical lines called *bars*. The term bar is often loosely applied to the measure as well as to the line. The exact length of the measure is indicated by a sign at the beginning of the piece of music. In common time, indicated by a C written after the clef, each measure contains a semibreve, or such notes and rests as make up together its value. Another form of common time, marked with a ¢, contains two

semibreves in the measure, or their equivalents in minims, crotchets, etc. Another method of indicating time (or rather more correctly, rhythm) is by figures, in the form of a fraction. The figures of the denominator are either 2, 4, 8, or 16, which (the semibreve being considered the unit) stand for minims, crotchets, quavers, and semiquavers respectively; and the numerator shows the number of these fractional parts of a semibreve in the measure. Besides common time, which may be indicated in two ways, there is triple time, in which a measure is made up of three minims, crotchets, or quavers, which can only be marked by figures; these are $\frac{3}{2}$, $\frac{3}{4}$, or $\frac{3}{8}$. When two or four measures of triple time are united in one measure the music is said to be written in compound common time, and is indicated by the fractions $\frac{6}{4}$ and $\frac{6}{8}$; rarer examples of compound time signatures are $\frac{9}{4}$, $\frac{9}{8}$, $\frac{9}{16}$, $\frac{12}{8}$, etc. The object of the division of musical passages into measures is to indicate their rhythm. Notes, like words or syllables, are *accented* or *unaccented*. The strongest accent is given to the first note of a measure. In common time of four notes to the measure the third has a subordinate accent, as, though in a less degree, the third measure note in triple time. In compound common time the subordinate accents fall on the first note of the last half of the measure, and in compound triple time on the first note of each of the groups of three of which the measure is composed. When a curve is placed over two notes in the same degree, but not in the same bar, the two notes are played as one of the length of both, and the first note acquires the accent. This displacement of the accent is called *syncopation*. If the curve is written over notes of different degrees it is called a *slur*, and indicates that the notes are to be played or sung smoothly, as if gliding into each other. When an opposite effect is wanted, that is, when the notes are to be produced distinct and detached (*stacco*), a dot is placed over them. The various degrees of loudness and softness which occur in a piece of music are indicated by such Italian words as *forte*, loud; *fortissimo*, very loud; *piano*, soft; *pianissimo*, very soft. In order to save time in writing music various abbreviations are used.

Melody is a particular succession of sounds in a single part, and is produced by the voice or by an instrument. A melody generally consists of an even number of phrases; this number may be four, eight, twelve, or sixteen. A phrase generally corresponds with a line in a verse of poetry. In order to produce an agreeable variety a melody may pass from the form of the scale in which it started to another, generally to the one most nearly related to it, that of the dominant or subdominant. This change from one key into another is called *modulation*. Except in very rare cases a melody ends on its keynote. A musical composition may consist of a series or progression of sounds so connected that several of them may be heard at the same moment. When several voices or instruments produce at the same instant sounds different in pitch, and so combined as to cause an agreeable sensation on the ear, the combination is called *harmonious*, and the proper method of combining these sounds is called the art of *harmony*. The series of notes taken by a single voice or instrument capable of producing only one note at a time is called a *part*. Four parts are by far the most common; but five, six, seven, eight, and even more numerous parts are common in the ecclesiastical compositions and madrigals of the old masters. When two sounds heard together are agreeable to the ear they are called *concordant*, or are said to form a *concord;* if, on the contrary, they grate upon the ear they are said to be *discordant*, or to form a *discord*. Concords are of two kinds—perfect and imperfect. The perfect is the minor fourth, the perfect fifth and the octave; the imperfect are the major and minor third, and the major and minor sixth. A perfect concord is so called because its conterminate sounds cannot be raised or depressed without becoming discordant. If three or more sounds be heard at the same time the combination is called a *chord*. When a chord is composed of concords only, or in other words when it is composed of a fundamental sound accompanied by its third (major or minor) and its fifth, it is termed a common chord. Of discords the most simple is the minor seventh, or, as it is usually called, the dominant seventh. The different motions of the parts which constitute harmony may be *parallel*, *direct* (or *similar*), *oblique* and *contrary*. Parallel motion is when two or more parts move in the same direction and remain at the same number of degrees distant; direct or similar motion is when the parts move in the same direction but do not remain at the same distance; oblique motion, either of the parts may be stationary while the rest move in parallel or contrary directions; contrary motion is when the parts approach or recede from each other. It rarely happens that all the parts can move in the same way upwards or downwards together. The rules generally given with respect to the motion and succession of concords are:

1. Octaves and fifths must not be consecutive in parallel motion. 2. Unnecessary and distant skips should be avoided as much as possible, and the chords should be as close and connected as may be. 3. The regular motion of the different parts must be observed; sharp intervals should ascend after the sharp, while flat intervals should descend after the flat. A piece of music harmonized throughout by concords would prove too cloying, and to prevent this discords are introduced. Certain discords are very disagreeable if produced abruptly without preparing the ear to receive them. The preparation of a discord is effected by taking care that the discordant note is heard in the preceding consonance. As the ear would not tolerate a long succession of discords it must be satisfied by a return to concords, which is called the resolution of a discord. This is effected by the part in which the discord appears moving upward or downward to the concordant note in the next chord.

History.—The first public use of music by every people has been in religious rites and ceremonies. The music of the Hebrew worship was of an elaborate character, and was probably derived from Egypt. To the Egyptian priests the Greeks seem also to have owed their ideas of music. It is confidently asserted by some that the Greeks were acquainted with harmony in the technical and musical sense of the word; that the notes A B C D E F G, produced by touching the white keys of the pianoforte, form the common Greek scale; and that their arrangement was copied from the keys of organs, which were derived by us from the Romans through the Greeks, and by the Greeks and Romans from ancient Egypt. The Romans derived all their public music from the Etruscans, and the art was for a long period confined to sacred uses. St. Ambrose (elected Archbishop of Milan 374) may be regarded as the father of the music of the Western Church, as he not only composed and adapted music to the different portions of the church service, but determined the musical idiom in which it was to be cast by selecting a set of simple scales from the exceedingly complicated system of the Greeks. His reputation has, however, been somewhat obscured by the next great musical reformer, Gregory the Great, whose epoch is fully two centuries nearer our own. During this long period the institutions of Ambrose fell into utter confusion, and Gregory, in attempting to restore order, found it necessary to supplement the Ambrosian scales, then first designated *authentic*, by four other subordinate or collateral scales called *plagal*. (See *Gregorian Tones.*) During the four centuries which connect the epoch of Gregory with that of Guido Aretino only two names are worthy of mention—that of Isidore, Archbishop of Seville, in whose *Sententiæ de Musica* we meet, for the first time at least among Christian writers, with the mention of harmony in the modern sense of the term; and that of Hucbald, a monk of St. Armand, Tournay (died 932), who not only mentions harmony, but gives examples of the harmony of his age, *diaphony* or *organum*. The greatest name, however, of the early middle ages is that of Guido Aretino (died 1050). The names which he gave to the notes, *Ut* (for *Do*), *Re*, *Mi*, *Fa*, *Sol*, *La*, are universally used to this day. *Si* was afterwards added by a musician named Le Maire. Within fifty years after the death of Guido a new form of musical art made its appearance, the characteristic of which was the combination of sounds of unequal lengths—music in which two or more sounds succeed one another, while one equal to them in length was sustained. This was called *discantus*, or descant. Descant, it is obvious, would argue the existence of some system of musical proportion among sounds of different duration, and written descant some means of distinguishing such sounds from one another. As might be expected, we hear of both inventions about the same time, the middle of the twelfth century, when the treatise on the *Cantus Mensurabilis* of Franco of Cologne was written, when notes appear first to have been used, and signs to represent the raising and depressing of individual sounds (flats and sharps) first came into being. Late in the thirteenth century we hear of Adam de la Hale, the Hunchback of Arras as he was called, born in 1240, the composer of several three-part songs, and also of the first comic opera, *Li Gieus de Robin et de Marion*. The beginning of the next century furnishes us with a remarkable evidence of musical advancement in the word *contrapunctum* (point against point), or as we now say, note against note. This word was first used in the works of Jean de Muris, the greatest theorist of the fourteenth century. The middle of the century gives us the first example of four-part music, in a mass performed at the coronation of Charles V of France (1360) and composed of Guillaume de Machault. By this time the organ had reached some degree of mechanical perfection, and several Belgian musicians visiting Rome in the last years of the fourteenth century carried

with them the first masses that had ever been seen there in written counterpoint. In the list of these singers (1380) we find the name of Dufay, whose compositions, though harsh in places to our modern ears, are far superior in design and clearness of texture to anything known to be produced by his predecessors. But the works of Dufay and his contemporaries have been cast into the shade by those of a later generation, of the masters of the new Belgian school, Ockenheim, his contemporaries and pupils. Canon, fugue, and imitation, practiced by Dufay, were greatly improved by Ockenheim, among whose pupils was Josquin Deprès, or Des Prez (died in 1521). The works of the latter drove those of every other composer from the churches of the Continent, and he was scarcely less successful in productions of a lighter class. His pupils and countrymen were to be found in every court and important city of the Continent, among the musical schools founded by them being those of Naples and Venice. The Italians, however, soon advanced beyond the limits of the art as taught by the Belgians. Constanzo Festa, whose *Te Deum* has been sung on the election of every pope since his time, was one of the creators of the madrigal; and Giovanni Animuccia is of special interest from his connection with St. Filippo de Neri, to which may be traced the origin of the oratorio. The first Roman school was founded by Claude Gondimel (1510-72), among whose pupils was the greatest composer the world had yet seen, Giovanni Pierluigi Palestrina (1524-94). Musical learning had by this time done its utmost. Every kind of contrapuntal artifice had been brought into play, but no attempt was made to bring out the meaning of the words, and this evil, in conjunction with the frequent use of secular melodies, came under the censure, first of the Council of Basel, and then of the Council of Trent. The committee appointed to carry out the decrees of the latter sought the aid of Palestrina, and his three masses, more particularly the third, the *Missa Papæ Marcelli*, at once saved music to the church, and established a type which is still recognized. At this period great musical skill and knowledge extended over every part of civilized Europe, the Italians being now, as the Belgians had been before, its chief masters and interpreters, except in England, which in this sixteenth century had a strictly national school comprising Tallis, Byrd, Farrant, Morley, Ward, Bull, Dowland, and last and greatest, Orlando Gibbons. The close of the century witnessed the birth of the *Opera seria*. Some faint approaches had been made in this direction before, but about the year 1580 a number of amateurs living in Florence, including Bardi, Corsi, Strozzi, Galileo (the father of the astronomer), and others, formed themselves into a society for promoting the closer union of poetry and music by reviving the musical declamation of the Greeks. Their attempts, however, were soon surpassed by the works of Claudio Monteverde, whose *Orfeo* opened up a new musial world. The first to profit by his discoveries was an artist born some twenty years later—Carissimi, the first great master of the sacred cantata in its various forms. He is said to have been the teacher of Alessandro Scarlatti, the founder of the Neapolitan school. With this school begins modern musical practice; better methods of fingering the keyed instruments, and of bowing the stringed instruments, not to speak of improvements in the instruments themselves; and above all these in importance and difficulty, the art of singing.

The history of the French school proper begins late in the seventeenth century, with J. B. Lully, born in 1633, the composer of many operas, ballets, and occasional pieces, and also of some church music. His music never had great popularity beyond France, but the influence of his example was extensive, and showed itself to some extent in Wise and Blow, and their immediate successors in the English Chapel Royal, the most distinguished of whom was Henry Purcell, the type of English composers. After him Arne, Croft and Green acquired a certain reputation, but an entirely new era was opened by the advent of Handel, who may be said to belong to England rather than Germany. From about the middle of the last century, when the career of J. Sebastian Bach ended, Germany has indisputably held the highest place in music. Gluck, Haydn, Mozart, Emmanuel Bach, and many others, before and after, owe much of the sweetness which they united with German strength to their study of the Italian masters. But in Beethoven, Weber, Spohr and Mendelssohn the traces of southern influence are hidden, and new emotional and poetic elements begin to find their way into music. Much, too, as the French musical drama owed in its origin to the Italians, its consolidation was the work of the Germans. Springing up with Lully, a Florentine, carried a step forward by Rameau, a Frenchman, it was subsequently immensely developed by Gluck and Meyerbeer (Germans), by Cherubini and Rossini (Italians), and by Méhul, Boieldieu, Hérold and Auber (Frenchmen). Against the best works

of the German masters, those of the purely sensuous school, represented by Donizetti, Bellini and Verdi, strove with some success for popularity; but the tide of victory was soon turned away from the south, and the last-named composer in his later works showed the force of the German influence. Of the later German school, claiming as its starting-point Beethoven's *Ninth Symphony*, in which poetry and music form a perfect whole, the chief exponents have been Wagner and Liszt, though with these, as manifesting more or less the same tendencies, must be cited the names of Schubert, Schumann, Mendelssohn, Berlioz, Chopin and Franz. Opinions may differ as to the extent to which this new development anticipates 'the music of the future,' but there can be no doubt as to the beauty and impressiveness of much of the work of these so-called 'tone-poets.' Among the later composers may be noted the names of Gounod, Massenet and Saint-Saens in France, Brahms and Strauss in Germany, Dvorak in Bohemia, Puccini in Italy, Rubinstein and Tschaikowski in Russia, MacDowell in America, and Grieg in Scandinavia. All have given proof of power and originality.

Music of the Spheres. See *Harmony of the Spheres.*

Musk, a substance used in perfumery and medicine, and obtained from several species of deer. (See *Musk-deer.*) A perfume of similar character is also obtained from one or two other animals (see *Musk-rat*); and various animals and plants are noted for emitting a strong musky smell.

Musk-deer, a genus of deer, forming the type of the family Moschidæ, which is essentially distinct from the family of the Cervidæ, or true deers. Their chief habitat is Asia and the islands of the Eastern Archipelago; though one species is found on the west coast of Africa. The typical species of the family is the *Moschus moschiferus*, found chiefly in the elevated tablelands of Central Asia, and particularly of Tibet. These animals attain the size of a young roe-deer, and the upper jaw bears prominent canine teeth. The males alone yield the *musk*, which is secreted by an abdominal gland of about the size of a hen's egg. The Tibet musk is most in repute, that known as Russian or Siberian being inferior in quality. Besides its familiar use as a scent, musk is employed medicinally as an antispasmodic. There are six or seven other species of *Moschus*, two of which, very diminutive, lack the musk gland.

Musk-deer (*Moschus moschiferus*).

Musk-duck, a species of duck, often erroneously called the Muscovy-duck (*Cairina moschata*), a native of America, and which has been domesticated. It has a musky smell, and is larger and more prolific than the common duck.

Muskegon (mus-kē'gun), a city of Michigan, capital of Muskegon County, situated at the upper end of Lake Muskegon, 38 miles N. W. of Grand Rapids. It has the best harbor on the west side of Lake Michigan and does a great trade in lumber, the timber being floated down the Muskegon River, and passing through extensive sawing and planing mills here. It is one of the most important manufacturing towns in the state, its industries being very numerous and varied. Surrounding it is a rich fruit and vegetable district. Pop. 24,062.

Musket (mus'ket), a hand-gun with which infantry soldiers were formerly armed. When first introduced, early in the sixteenth century, as a development of the culverin and arquebus, it was discharged by means of a lighted match (hence the name *matchlock* given to it), and was so heavy that it had to be laid across a staff or *rest* to be fired. To make use of it the soldier was required to carry a slow-burning match with him, which was apt to be extinguished in wet weather. The wheel-lock followed (sixteenth century), the chief feature of which was a wheel made to revolve by means of a spring, and to cause sparks by friction against a flint. The next improvement was the flint-lock proper (about 1625), in which sparks were produced by one impact of a piece of flint on the steel above the priming powder. Musketeers were soon introduced into all armies, and in the beginning of the seventeenth century infantry consisted of pikemen and musketeers, and all changes in regard to the relative proportion of the two arms were always in favor of the latter. The flint-lock musket was intro-

duced into the British army towards the end of the seventeenth century, and was the British musket of the days of the Peninsular war and Waterloo, known familiarly as 'Brown Bess.' It was superseded by the percussion musket in 1842, this musket being in turn superseded by the rifle. See *Rifle*.

Musketoon (mus-ke-tön'), a short thick musket, now obsolete, of very wide bore, and sometimes bell-mounted like the blunderbuss, carrying a ball from 5 to 7½ ounces.

Muskingum (mus-kin'gum), a river in the State of Ohio, and falling into the Ohio River at Marietta. It is about 120 miles long, and its course is followed by the Ohio and Erie Canal as far as Zanesville.

Musk-mallow (musk-mal'ō; *Malva moschāta*), a perennial plant, so named from the peculiar musky odor thrown off by all parts of the plant.

Musk-melon, a delicious variety of melon, named probably from its fragrance.

Muskogee, a city of Muskogee County, Oklahoma, 117 miles s. of Parsons. It is the seat of Harry Kendall College. The industries include cotton gins and compresses, flour mills, etc. Pop. 25,278.

Musk-ox (*Ovibos moschātus*), an animal intermediate between the ox and sheep. Resembling in general appearance a large goat-like sheep, its body is covered with a coat of tufted hair, brownish in color and of great length. The hair about the neck and shoulders is so thick as to give the animal a 'humped' appearance; on the rest of the body it is very long, smooth and flowing, while interspersed among its fibers is a layer of lighter-colored wool. The musk-ox is active and agile, climbing mountainous places with ease and dexterity. The horns, broad at the base and covering the forehead and crown, curve downwards between the eye and the ear, and then upwards and slightly backwards. The horns of the female are smaller than those of the male, and their bases do not touch. The ears are short, the head large and broad, the muzzle blunted. The average size of the male is that of a small domestic ox. Gregarious in habits, each herd numbers from twenty to thirty members. The female brings forth one calf in May or June. The food consists of grass, lichens, etc. The musk-ox inhabits the Arctic regions of America north of the 60th degree of latitude to the upper extremity of Greenland. The flesh is pleasant to the taste, though it smells strongly of musk, the odor of which is also diffused from the living animal.

Musk-plant, a little yellow-flowered musky-smelling plant of the genus *Mimulus* (*M. moschatus*), a native of Oregon and some other western states and cultivated to some extent in gardens.

Musk-rat (*Fiber zibethicus*), an American rodent allied to the beaver, and the only known species of the genus. It is about the size of a small rabbit, and has a flattened lanceolate tail, covered with small scales and a few scattered hairs. Its toes are separate, and provided with a stiff fringe of hair. In summer it has a smell of musk, which it loses in winter. The odor is due to a whitish fluid deposited in certain glands near the origin of the tail. Of considerable commercial importance on account of its fur, the musk-rat, or *musquash*, as it is frequently called in America, from its Indian name, is taken in large quantities for its skins, large numbers of which are used by furriers. Very common in North America, the musk-rat lives along the margins of streams, in the banks of which it makes its nest. The musk-rats of Europe, or desmans (*Myogălē moschāta* and *M. pyrenaica*), are aquatic insectivorous animals allied to the shrews and moles, having a long flexible nose, and a double row of glands near the tail secreting a substance of a strong musky smell; found in Southern Russia and the Pyrenees. The musk-rat of India (*Sorex Indians* or *myosūrus*) is a kind of shrew the size of the common rat.

Musk-tree, Musk-wood, the names of trees and wood that smell strongly of musk. The musk-wood of Guiana and the West Indies is *Guarea trichilioides;* the musk-tree of Tasmania, *Eurybia argyrophylla.*

Muslin (mus'lin), a fine thin cotton fabric, first made at Mosul or Moussul (whence the name), afterwards in India, and first imported into England about 1670. About twenty years afterwards it was manufactured in considerable quantities both in France and Britain, and there are now many different kinds made, as *book, mull, jaconet, leno, foundation,* etc. Some Indian muslins are of extraordinary fineness, but they can all be rivaled in Europe. *Figured muslins* are wrought in the loom to imitate *tamboured* muslins, or muslins embroidered by hand.

Muspelheim (mus'pel-hīm), in the Scandinavian mythology, the southern part of the universe and the abode of fire, whence sparks were collected to make the stars. At the oppo-

site pole to Muspelheim is Niflheim, where all is frozen, cold and dark.

Muspratt (mus'prat), JAMES SHERIDAN, an English chemist, born in 1821; died in 1871. He studied chemistry under Thomas Graham, both at Glasgow and in London, and afterwards under Liebig at Giessen, in Germany, where he remained several years. In 1850 he established a college of chemistry at Liverpool. His chief work was a *Dictionary of Chemistry*, but he was also the author of various contributions to scientific journals.

Musquash (mus'kwosh), a name for the musk-rat.

Musschenbroek (mus'*h* en-brök), PIETER VAN, a Dutch natural philosopher, born at Leyden in 1692. He held professorial chairs successively at Duisburg, Utrecht and Leyden, where he died in 1761. He visited England, became acquainted with Newton, and was made a fellow of the Royal Society. His principal works are *Elementa Physica*, *Tentamina Experimentorum*, *Institutiones Physicæ* and *Compendium Physicæ Experimentalis*.

Mussel (mus'el), a term popularly given to several lamellibranchiate molluscs, section Asiphonida, or those in which 'siphons,' or tubes admitting water to the gills, are absent. The common mussel (*Mytĭlus edūlus*) forms a typical example of the family Mytilidæ, the shells of which family are equivalve, and have a hinge destitute of teeth. It has a 'beard,' and is the same as the salt-water mussel of New England. The mussel is extensively employed in Scotland as a bait by deep-sea fishermen; and in some districts it is used as an article of food, the best mussels approaching nearly to the oyster in flavor, though occasionally found to be unwholesome. It is cultivated as an article of diet on the European continent, the 'mussel-farms' of the Bay of Aiguillon, near Rochelle in France, forming the most notable example. The family Unionidæ includes the fresh-water or river mussels (*Unio*) and the swan or pond mussels (*Anodon*). The Unionidæ inhabit fresh water exclusively. The pond mussels, of which many species are known, are found in the rivers and lakes both of Europe and America. The hinges of the shell in the genus *Anodon* are destitute of teeth, in the genus *Unio* toothed. The *Unio littorālis* is a familiar species. The *Union margaritifĕrus*, or pearl-mussel, has attained a reputation from the fact that it has yielded pearls to a considerable value in the Don, Tay, Doon, Forth, Spey, and other British streams.

Musselburgh (mus'el-bur-ö), a burgh of Scotland, in Midlothian, 6 miles east of Edinburgh, on the Firth of Forth, at the mouth of the Esk, which divides it into two parts, ancient Musselburgh and Fisherrow. It has a bridge, believed to be of Roman erection; and a curious old tolbooth, not now used as a jail. The battle of Pinkie, in 1547, was fought in the vicinity. Pop. 11,711.

Musset (mû-sā), LOUIS CHARLES ALFRED DE, a French poet, novelist and dramatist, born at Paris in 1810; died there in 1857. After trying various professions he gave himself up wholly to literature, and in 1829 published a volume of poems called *Contes d'Espagne et d'Italie*, which had an immediate and striking success. In 1831 appeared *Poésies Diverses*, and in 1833 *Un Spectacle dans un Fauteuil*, in which the two chief pieces are a comedy of a light and delicate grace called *A quoi Rêvent les Jeunes Filles*, and a poem entitled *Namouna*, written after the manner of Byron. In 1833 he traveled in George Sand's company, but their intimacy soon came to an end. In 1836 was published his *Confession d'un Enfant du Siècle*, a gloomy novel, containing the analysis of a diseased state of mind, all the phases of which the author had studied in himself. The same settled melancholy also distinguishes his *Rola*, *Une Bonne Fortune*, *Lucie*, *Les Nuits*, *Une Lettre à Lamartine*, *Stances à Madame Malibran*, *L'Espoir en Dieu*, and other poems. Among his light and sparkling dramatic pieces are: *On ne badine pas avec l'Amour*, *Les Caprices de Marianne*, *Il ne faut pas jurer de Rien*, etc. In 1848 Musset was deprived by the revolution of the situation of librarian to the ministry of the interior, a sinecure which he had obtained through the favor of the Duke of Orleans; but he was restored to this post under the empire, and was in addition appointed reader to the empress. In 1852 he was admitted a member of the French Academy. De Musset was one of the most distinctive, and, in a certain sense, original of modern French writers. At a time when the battle between the Classicists and Romanticists was at its height he took sides with neither, but made for himself a style combining the excellences of the two schools. His elder brother, Paul, was also a writer of some ability, but always overshadowed by the brilliance of Louis.

Mussulman. See *Moslem*.

Must, the juice of the grape, which by fermentation is converted into wine.

MUTSUHITO, FORMER MIKADO OF JAPAN

Mustang (mus'tang), a small wild horse of the Southwestern United States and Northern Mexico, where it is found in extensive herds, and is captured and tamed as the Indian pony. A reversion from the domesticated stock, it seldom exceeds 13 hands in height, but is a strong and useful animal, capable of great endurance.

Mustard (mus'tard), the common name of plants of the genus *Sināpis*, nat. order Cruciferæ. The seeds of the *S. alba* and *S. nigra* (white

Mustard (*Sināpis nigra*).

and common mustard), when ground and freed from husks, form the well-known condiment of the shops. The plant is an annual, with stems 3 to 4 feet in height, lower leaves lyrate, upper lanceolate and entire flowers small and yellow. The preparation from the seeds is often very valuable as a stimulant to weak digestion, and as an adjunct to fatty and other indigestible articles of food. When mixed with warm water and taken in large quantities it acts as an emetic. The tender leaves are used as a salad, and the seeds of *S. nigra* are used in the well-known form of poultice, being applied to various parts of the skin as a rubefacient. *Wild mustard* or *charlock* (*S. arvensis*) is a troublesome weed in cornfields, often making them yellow with its flowers. Its seeds are said to have yielded the first Durham mustard, and they are still gathered to mix with those of the cultivated species.—*Oil of mustard* is an essential oil obtained from the seeds of *S. nigra*. It is very pungent to the taste and smell, and when applied to the skin speedily raises a blister.

Mustela (mus-tē'la), the weasel genus of carnivorous animals.

Muster (mus'tėr), in a military sense, a review of troops under arms, to see if they be complete and in good order, to take an account of their numbers, the condition they are in, their arms and accouterments, etc.

Muster-roll, a list of the officers and men in every regiment, troop, or company of soldiers.

Musulman. See *Moslem*.

Mutiny (mū'ti-ni) is the unlawful insurrection or revolt of soldiers or seamen against the authority of their commanders; open resistance of officers or opposition to their authority. A mutiny is properly the act of numbers; but by statutes and ordinances for governing the army and navy the acts which constitute mutiny are multiplied and defined; and acts of individuals, amounting to resistance of lawful commands of officers, are declared mutiny. Officers beginning or joining mutiny are guilty of the offense. Mutiny is punishable in the navy by fine or imprisonment, or both; in the army it is punishable by death or such other punishment as a court-martial shall direct.

Mutsuhito (mötz-u-hē'to), former emperor or mikado of Japan, was born in 1852, and succeeded to the throne in 1867, marrying the Princess Haruko in 1869. His reign was marked by great reforms, among them the suppression of the feudal organization of the nobility, which so long impeded the political progress of the country. Others were the giving Japan a representative system of government and adopting the institutions of Western civilization. Under his reign Japan made remarkable progress, which not only placed it foremost among Asiatic nations, but ranked it among the great powers of the world. This was the result of successful wars waged against China and Russia. Mutsuhito proved himself an able and progressive ruler. He died in 1912, and was succeeded by his son Yoshihito, who was born in 1879.

Muttra (mut'tra), a town in India, capital of Muttra district, on the Jumma, 36 miles northwest of Agra. It is an old Hindu city, one of the most artistic and interesting in India, and being regarded as the birthplace of Krishna is a great center of Hindu devotion and place of pilgrimage. Pop. 60.042.

Mutule (mū'tūl), an ornament in Doric architecture, corresponding to the modillion in the Corinthian and Composite orders, and consisting of a projecting block in the cornice immediately under the corona and perpendicularly above the triglyph. It is often made to slope downwards towards the front,

and usually has guttæ or drops underneath.

Muzaffarnagar (mö-zuf'fur-nag-ur), a town of India, 70 miles N. N. W. of Delhi; chief town of district of same name. Pop. 23,444.

Muzaffer-ed-Din, shah of Persia, born in 1853, son of Nasr-ad-Din. He succeeded in 1896, on the death of his father by assassination and died in 1902.

Muziano (mö t-se-â'nō), Girolamo, Italian painter, born near Brescia in 1528. After studying the art of Titian he repaired to Rome about 1550, where he soon attracted attention by his landscapes. Subsequently he became an imitator of the style of Michael Angelo, and his picture of the *Raising of Lazarus* at once established his fame. He also made great improvements in mosaic work. The handsome fortune gained by his talents and industry he devoted in part to assisting to found the Academy of St. Luke at Rome. Died 1590 or 1592. Many of his works are to be met with in Rome.

Muzo (mö'sō), a village in the state of Colombia, South America, N. W. of Bogota, noted for its rich mine of emeralds.

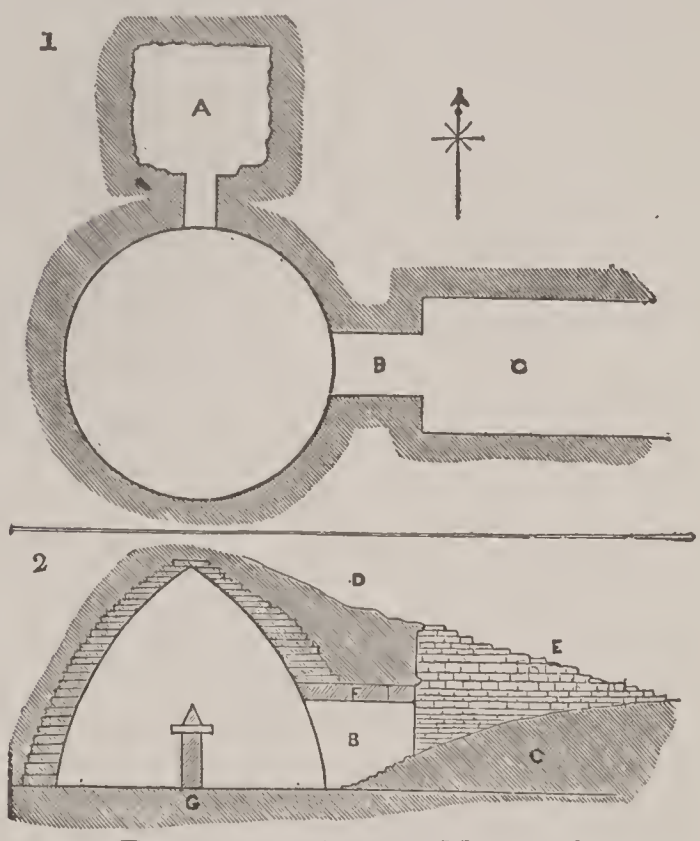
Mycelium (mī-sē'li-um), the cellular filamentous structure of fungi. Mycelium consists of whitish anastomosing filaments which spread like a network through the substances on which the fungi grow. In the cells of the mycelium reproductive spores are developed.

Mycenæ (mī-sē'nē), an ancient city of Argolis, in the Peloponnesus, about 6 miles northeast of Argos. It is said to have been founded by Perseus, and before the Trojan war to have been the residence of Agamemnon, in whose reign it was regarded as the leading city in Greece. Its ruins are extremely interesting from their antiquity and grandeur. Among them are the Lion's Gate, and the vaulted building of enormous stones called the *Treasury of Atreus*, etc. Dr. Schliemann carried out excavations here with valuable and interesting results.

Mycŏni (mik'o-nē: anciently *Myconos*), an island in the Grecian Archipelago, one of the Cyclades, about 21 miles in circuit. The inhabitants are chiefly employed in seafaring pursuits. The capital, Mycŏni, a seaport, contains about 3400 inhabitants. The island produces barley, raisins, and figs, with some wine. Pop. 4466.

Myelitis (mī-e-lī'tis: from the Greek *myelos*, marrow), in medicine, inflammation of the substance of the spinal marrow.

Myers (mī-erz), Frederick W. H., an English physicist, born in 1843. He became an active member and secretary of the Society for Psychical Research, and published *Essays Modern and Classical, Science and a Future Life*, and, in collaboration, *Phantasms of the Living*. His most important work is *Human Personality and its Survival of Bodily Death*, a critical review of the spiritualistic hypothesis. He died in 1901.



Treasury of Atreus, Mycenæ.

1, Plan.—A, Rock-cut Chamber. B, Doorway. C, Approach. 2.—Section C, Approach filled with earth. D, Slope of hill. E, Wall on north side. F, Lintel. G, Door to A.

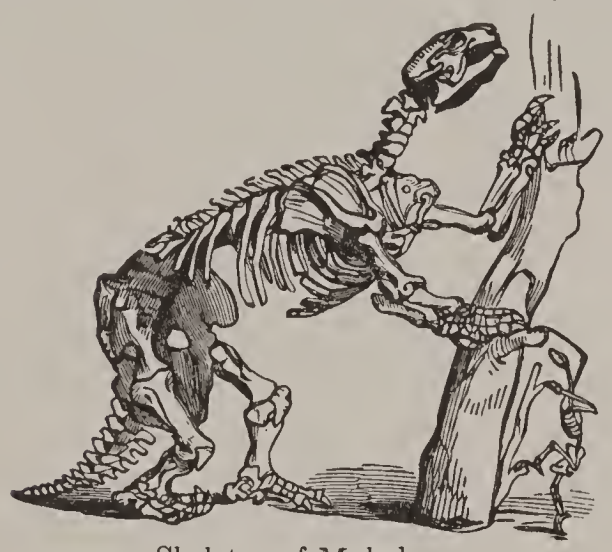
Mygale (mig'-al), a genus of spiders, the type of the family Mygalidæ, furnished with four pulmonary sacs and spiracles, four spinnerets, eight eyes, and hairy legs. Their nests, constructed of silk, are built in clefts of rock, trees, etc., and in the ground. The bird catching spider of Surinam belongs to this species; other larger species frequently prey on small vertebrate animals, not by laying toils for them, but by regularly hunting them. They envelop their eggs in a kind of cocoon.

Mylabris (mi-lab'ris), a genus of coleopterous insects nearly allied to the Cantharides (which see), noteworthy because of the use made of some species as a blister-fly.

Mylitta (mi-lit'ta), an Assyrian goddess, identified by the Greeks

with Aphroditē. She was, as goddess of the moon, the female principle of generation.

Mylodon (mīl'ō-don), a genus of extinct edentate mammalia, allied to the megatherium. Its remains have been found in the upper tertiaries of South America. In size the *Mylodon robustus*—the most familiar species—attained a length in some instances of 11 feet. Of terrestrial habits, the mylodon



Skeleton of Mylodon.

obtained the vegetable food upon which it subsisted chiefly by uprooting trees. The genus ranged into North America, remains of one species (*M. harlani*) having been found in the United States.

Myograph (mī'-ō-graf), an instrument for recording contractions and relaxations of the muscles. Several forms have been devised, that of M. Laulanie being styled myoscope.

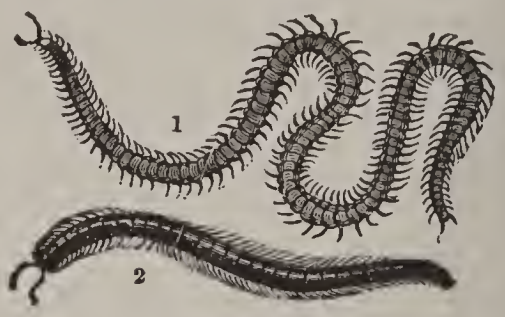
Myology (mī-ol'-ō-ji; Greek, *mys*, muscle, and *logos*, science), the term applied distinctively in anatomical and physiological science to the description of the muscular system both in its structural and functional aspects.

Myopia (mī-ō'pi-a), the scientific name for short-sightedness. See *Sight, Defects of.*

Myosotis (mī-o-sō'tēz), a genus of plants belonging to the Boraginaceæ, and comprising numerous European and Northern Asiatic, a few North American, and three of four Australian species. The *M. palustris* is the well-known forget-me-not. Other species are popularly known as scorpion-grass.

Myoxus (mī-oks'us), the dormouse genus of animals.

Myriapoda (mir-i-ap'o-da; *myrioi*, ten thousand, and *pous, podos*, foot), the lowest class of the higher annulose or anthropodous animals, represented by the centipedes, millepedes, and their allies, and resembling the Annelids in the lengthened form and the numerous segments of the body, each segment being provided with one pair of ambulatory feet, whence the name. They have a distinct



Myriapoda.

1, *Geophĭlus sefeborii*, one of the Chilopoda.
2, *Iulus plicātus*, one of the Chilognatha.

head, but no division of the body into thorax and abdomen, as in insects. They are therefore of a lower structural type than insects, which in general organization they resemble. No wings are developed. They respire through minute spiracles or pores along the whole length of the body, and are invested with a hard chitinous or horny covering or exoskeleton. This class is divided into two orders, the Chilognatha or Diplopoda, in which the fusion of two rings gives apparently two pairs of feet on each ring; and the Chilopoda, which have two pairs of foot-jaws or maxillipeds, and not more than one pair of feet on each segment.

Myristica (mir-is'ti-ka), the only genus of the nat. order Myristicaceæ. *M. fragrans*, a native of the Moluccas, yields the nutmeg of the shops. Other species bear fruit that may be employed as a substitute for nutmeg.

Myrmecoph'aga. See *Ant-eater.*

Myrme'leon. See *Ant-lion.*

Myrmidons (mir'mi-donz), an anorent Greek people of Thessaly, who accompanied Achilles to the Trojan war. They are said to have emigrated into Thessaly under the leadership of Peleus. The term has come to signify the followers of a daring and unscrupulous leader, or the harsh and unfeeling agents of a tyrannical power.

Myrobalan (mi-rob'a-lan), a dried fruit of various species of trees, brought from the East Indies, all slightly purgative and astringent. Mirobalans are used by the Hindus in calico printing and medicine, and imported into United States for dyers and tanners, especially the latter. They are the produce of several species of Terminalia (order Combretaceæ), the chief of which are the belleric myrobalan (*T. Bellerica*) and

the chebulic (*T. Chebulica*). Written also *Myrobolan, Myrobolam,* etc.

Myron (mī'ron), one of the chief sculptors of the older Attic school, who flourished in the middle of the fifth century B.C. The famous *Discobolus,* or *Quoit Player,* is the only certainly known work of his a copy of which has come down to our time.

Myrrh (mer), a plant. See *Chervil.*

Myrrh, is the name given to a gum resin which exudes from a shrub growing in Arabia and Abyssinia, called *Balsamodendron Myrrha.* It was much esteemed as an unguent and perfume by the ancients, who used it also for embalming and for incense. It is still used as a perfume and for incense, as also medicinally. By distillation with water myrrh yields a viscid, brownish-green, volatile oil. Myrrh of the best quality is

Myrrh (*Balsamodendron Myrrha*).

known as Turkey myrrh; that of an inferior kind goes under the name of East Indian, being exported from Bombay.

Myrtaceæ (mir-tā'se-ē), the myrtle tribe, an extensive and important nat. order of polypetalous exogens, mostly inhabiting warm couuntries, and in all cases either shrubs or trees. They have simple entire leaves, often dotted with resinous pellucid glands and regular, axillary and solitary, or spiked, corymbose, or panicled white, pink, or yellow (never blue) flowers, with numerous stamens. Some yield useful products, such as guavas, cloves, pimento, Brazil-nuts, and cajeput oil. The eucalypts or gum-trees are characteristic of Australia.

Myrtle (mer'tl; *Myrtus*), a genus of plants, nat. order Myrtaceæ, consisting of aromatic trees or shrubs, with simple opposite leaves sprinkled with pellucid glandular points, and having axillary or terminal white or rose-colored flowers. One species, the common myrtle, is a native of the south of Europe and other countries bordering on the Mediterranean. It has been celebrated from remote antiquity on account of its fragrance and the beauty of its evergreen foliage, and by different nations was consecrated to various religious purposes. The brows of bloodless victors were adorned with myrtle wreaths, and at Athens it was an emblem of civic authority. With the moderns it has always been a favorite ornamental plant. It flourishes in the open air only in warm countries. The seeds of several species, as the small-leaved myrtle of Peru, the limia myrtle of Chile, and some others, are palatable and eaten by the people.

Myrtle Wax. See *Candleberry.*

Mysia (mis'i-a), in ancient times the name applied to a district in the northwest of Asia Minor, which varied greatly in extent at different periods.

Mysis (mī'sis), the opossum shrimps, a genus of crustaceans belonging to the order Stomapoda. They are the chief crustaceans of the Arctic Ocean, and constitute the principal food of the whalebone whale.

Mysole (mī-sōl'), an island in the Indian Archipelago, between Ceram and the northwest extremity of New Guinea. It is about 50 miles long by 15 miles broad, and is inhabited by immigrant Malays and by Papuans. Trepang, ambergris, birds of paradise, pearls, etc., are exported.

Mysor (mī-sōr'), or MYSORE, a principality of Southern India: area, 27,936 square miles. It is inclosed east and west by the Eastern and Western Ghauts, and on the south by the Nilgiri Hills, and consists of table-lands about 2000 feet above the level of the sea. The only river of importance is the Kaveri. There are many large tanks and artificial reservoirs used for irrigation, and the soil produces all the grains and vegetables of the other parts of India and many of the fruits of Europe. Coffee and silk are largely produced, and there are valuable forests. Silk and cotton manufactures are carried on, and there are manufactures of cutlery, copper vessels, and gold and silver lace. Mysor is the capital. Bangalor is the British headquarters. The revenue and expenditure of the principality are somewhat over £1,000,000. The ruinous misgovernment of the native prince whom the British had set up in Mysor caused his deposition in 1831. The territory continued under British administration till 1881, when it was handed over to a na-

tive maharajah educated under the care of the British. Pop. 5,539,399.

Mysor, the capital of the state of the same name, 250 miles west by south of Madras, stands at an elevation of 2450 feet above the level of the sea. The streets are regular, and the houses intermingled with trees and temples. The fort, separated from the town by an esplanade, is built in the European style. It contains the rajah's palace (which boasts a magnificent chair or throne of gold) and the dwellings of the principal merchants and bankers, and other private edifices. To the south of the fort and about 5 miles from the city is Mysor Hill, on the summit of which is the British residency. The leading industry is carpet-weaving. Pop. 68,111.

Mysteries (mis'ter-iz), a kind of rude dramas which were a favorite spectacle in the middle ages, represented at solemn festivals. The subjects were of a religious character, and the ecclesiastics were at first the performers and authors, the performance being in church. Such plays were called *mysteries* because they taught the mysterious doctrines of Christianity, and the mysteries proper represented scenes from Scripture history, being thus distinct from the *miracle* plays which dealt with lives of saints, though the distinction is not always attended to. These plays were usually exhibited in a connected series by the guilds or trades of a town. They sometimes took several days to perform. Thus we hear of one which lasted eight days, and contained the greater part of the Scripture history, beginning with the creation and ending with the judgment day. The *Passion of Christ*, the *Slaughter of the Innocents*, etc., were among the subjects represented, the first perhaps more frequently than any other. Corpus Christi day was the chief occasion on which they were performed, and they continued from the twelfth to the sixteenth century. Such plays are still performed at various places in Roman Catholic countries. The passion-play performed at the village of Oberammergau, in Bavaria, every ten years, is a play of this kind. The mysteries were superseded by the moralities (which see).

Mysteries, among the ancient Greeks, and afterwards also among the Romans, secret religious assemblies which no uninitiated person was permitted to approach. They originated at a very early period, and seem to have had a double object—first, that of handing down the traditions relating to the divinities in whose honor they were celebrated; and secondly, that of teaching and practicing religious rites. The most important Greek Mysteries were—1, The Eleusinian (see *Eleusis*). 2, The Samothracian, celebrated in honor of the Cabiri (see *Cabiri*). 3, The Dionysia, which were celebrated in honor of Bacchus or Dionysius. These were of so licentious a character that they were finally forbidden as prejudicial to the public peace and morals. This was likewise done in Italy by a decree of the Roman Senate in 166 B.C. 4, Orphic, founded by some who called themselves followers of Orpheus.

Mysticism (mis'ti-sizm), a word of very vague signification, applied sometimes to views or tendencies in religion which aspire towards a more direct communication between man and his Maker through the inward perception of the mind, than that which is afforded through revelation, or to efforts or inclinations by some special and extraordinary means to hold intercourse with divine powers or the inhabitants of higher worlds. According to John Stuart Mill, 'whether in the Vedas, in the Platonists, or in the Hegelians, *mysticism* is neither more nor less than ascribing objective existence to the subjective creations of our own faculties, to ideas or feelings of the mind, and believing that, by watching and contemplating these ideas of its own making, it can read in them what takes place in the world without.' The tendency towards mysticism seems naturally implanted in some natures, and has been observed in all ages. It is a characteristic feature of the great Asiatic religions, Brahmanism and Buddhism. In the Neo-Platonic philosophy it is an important element, as represented by Plotinus (204-269 A.D.). Christianity, in consequence of its special tendency to practical good, as well as of its submission to a system of doctrine expressly revealed, would seem to have afforded little scope for the extravagances of mysticism. It soon, however, made its appearance, forming a kind of profane mixture, and reached its extreme in the writings of the so-called Dionysius the Areopagite. This pseudo-Dionysius obtained an extensive influence, especially through Hugo St. Victor, in the twelfth century, and was everywhere held in high respect until the time of the Reformation. In opposition to scholasticism, which labored in the construction of a systematic and almost demonstrative theology, this system embodied a theology of feeling and immediate illumination, which attached very little importance to intellectual effort, and laid so much the more weight on purification of heart and ascetic morality. Of the most notable of the German mysticists in the middle ages were Eckhart and

VENUS DE MILO

APOLLO BELVIDERE

MARS

MERCURY

Four masterpieces of sculpture. The Venus de Milo and the Mars are in the Louvre Museum, Paris; the Apollo Belvidere, in the Vatican, Rome; the Mercury, in the Acropolis Museum, Athens, Greece.

Tauler. In the philosophy of the fifteenth and sixteenth centuries, in Paracelsus. Bruno, and others, mysticism took a direction which at a later period gave rise, on the one side, to the alchemists and Rosicrucians, and on the other side to a number of religious sects, of which such men as Jacob Böhmen and Swedenborg may be considered the representatives. The Quietism of Madame Guyon and her adherents (such as Fénelon) in France in the eighteenth century was a product of the same nature.

Mytens (mī'tens), Daniel, a Dutch portrait painter, born at The Hague about 1590. He came to England in the reign of James I, and was named painter to Charles I. But after several years' enjoyment of royal and aristocratic favor he declined before the rising star of Vandyke and returned to Holland. Many of his portraits are at Hampton Court.

Mythology (mi-thol'o-ji; Greek, *mythos*, a tale or fable, and *logos*, a discourse), the collective name for the whole body of fables, legends, or traditions (myths) that take their rise at an early period of a nation's existence and of its civilization, and that embody the convictions of the people among whom such fables arise as to their gods or other divine personages, their origin and early history and the heroes connected with it, the origin of the world, etc. Such fabulous narratives seem to grow up naturally among all early peoples, and are found among the ruder races at the present day; but the mythologies which have been most studied, and the tales belonging to which are best known, are those of ancient Greece and Rome, Scandinavia, the Hindus, and ancient Egypt. Though speculations as to the origin of mythology have been put forth from a very early period, it is only in recent times, by the help of comparative philology, and by comparing together the myths of different peoples (comparative mythology), that any real advance has been made. Myths are of course believed in by the bulk of the people among whom they are current, and it is only when speculative and reflective spirits arise, and when science and philosophy have made some advances, that their truth is called in question. Thus Zeus, Apollo, Athēnē, Heracles, and the other divinities of ancient Greece, were believed by the bulk of the people to have a real existence, and the stories regarding them were looked upon as true; but even in Greece in early times the absurdities and monstrosities of some of the myths attracted the attention of philosophers, and led to attempts at explaining the stories in such a way as that they should not shock common sense or moral feeling. In doing this three chief systems of interpretation were followed, called respectively by Max Müller the *ethical*, the *physical*, and the *historical*. Those who adopted the first explained that the stories of the power and omniscience of the gods, of their rewarding good and punishing evil, were invented by wise men for the purpose of maintaining law and order in communities—leaving it to be supposed that the immoral representations of the gods were the inventions of poets. The interpreters of the physical (also called the *allegorical*) school held that the myths contained explanations of natural phenomena, or of certain views regarding them, under a peculiar phraseology, which disclosed its hidden wisdom when rightly understood. The third or historical school, identified with the name of Euhemerus, represented the gods as having been originally kings or chiefs, great warriors, sages, or benefactors of the human race, who, being exalted above their fellowmen in life, after their death gradually came to be looked upon as deities.

Perhaps the most common theory of mythology at the present day is one that is based upon comparative philology, and on a comparison of the myths of the different Indo-European nations, and finds its chief exponents and supporters in Max Müller and Sir George W. Cox. It maintains that all myths have their origin in physical phenomena; but it differs from the older physical or allegorical school in explaining myths as an unconscious product of the popular mind, whereas an allegory (such as the older physical school represented myths to be) is a conscious product of some individual mind. The exponents of this school tell us that in order to understand how myths grow up naturally we must carry our thoughts backwards to an early stage of language and civilization, when men have little or no real knowledge of the external world, when they use themselves as the gauge of all phenomena, and endow every object of sense with a conscious life similar to their own, applying to inanimate objects the language which they use when speaking of their own feelings or actions. Thus in early times men would speak quite naturally of the sun as the child of the night, as the destroyer of the darkness, as the lover of the dawn and as deserting her, as traveling over many lands, as the child of the morning, as her husband, as her destroyer, and so on. This language was

natural in early times, and was perfectly understood as descriptive simply of natural phenomena, and nothing else; but in course of time such expressions lost their natural significance, and in this way it was explained that Phœbus Apollo, Endymion and Phaëthon, for instance, all originally significant epithets applied to the sun from his brilliancy or other characteristic, became the names of divinities, who were regarded as quite distinct from each other. So Zeus originally meant the sky, Athēnē and Daphnē the dawn, Hermes the wind, and so on. According to this theory the story of Apollo slaying the children of Niobē with his arrows is nothing more than a mythological way of telling how the morning clouds are dispersed before the rays of the rising sun. Heracles or Hercules, again, is the sun laboring throughout his life for the benefit of others; soon after birth he strangles the serpents of darkness, and after performing innumerable toils he dies on the funeral pyre, as the sun sinks in the fiery west. Endymion, as his name implies, is the setting sun, who is courted by the moon, and who sinks to sleep in the west. Some of these identifications of deities with natural phenomena are pretty certain. Zeus, for instance, the supreme god of Greece, the same as the Jupiter of the Romans and the Dyaus of the early Hindus, is clearly the bright sky and among the Hindus the name of the sky-god Dyaus always retained its meaning of sky, so that Dyaus had only an indistinct personality as a deity. The Hindu Varuna, a sky-god, is clearly the same as the Greek Ouranos, which latter word, besides being the name of a deity, had the ordinary signification of sky or heaven. So the Scandinavian Thor, the god of thunder, can hardly be anything else than thunder personified. Yet as a whole the 'solar theory' cannot be accepted as a key to all mythology. It fails to account for many of the wild and monstrous myths told of deities, of the creation of the world, of the state of the dead, etc., and though it may throw a certain amount of light on the mythology of the Aryan or Indo-European nations, it is quite insufficient when myths as a whole are investigated.

Another road, therefore, has been taken by some recent investigators. Thus Mr. Andrew Lang finds a key to mythology in a study of the myths and mental habits of savage races; he maintains that 'the savage and senseless element in mythology is for the most part a legacy from ancestors of the civilized races who were in an intellectual state not higher than that of Australian Bushmen, Red Indians, the lower races of South America, and other worse than barbaric peoples,' and that the monstrous myths current in Greece, Egypt and India were thus inherited. He points to the currency of such myths among savages at the present day, and to the fact that in general savages are eager to arrive at some explanation of the natural phenomena around them, and are quite satisfied with explanations that to civilized men may seem even imbecile. When a phenomenon presents itself the savage requires an explanation, and this he makes for himself, or receives from tradition, in the shape of a *myth*. But the fact is that no one theory can be expected to explain the origin of all myths, and it is impossible to deny that while some may be pure products of imagination, tales invented by early bards or minstrels to beguile a weary hour, in others fragments of real history may be hidden.

Mytilene, or MITYLENE (mit-i-lē′nē), a town in the island of Lesbos. See *Lesbos.*

Myxinidæ (miks-in′i-dē), the name applied to the Hag-fishes, one of the two families included in the order Marsipobranchii ('pouch-gilled') of the class fishes. The best-known species is the common or glutinous hag (*Myxĭnē glutinōsa*). See *Hag.*

Mzab (mzäb), a district in Algeria, about lat. 33° N.; long. 4° E.

Mzensk (mtsensk). See *Mtzensk.*

N

N, the fourteenth letter and eleventh consonant of the English alphabet; formed by placing the point of the tongue against the root of the upper teeth and forcing out the breath. It is classed as a nasal, a lingual, and liquid or semivowel. In English and most other languages *n* has a pure nasal sound; in French and Portuguese, after a vowel in the same syllable, as *on*, *un*, etc., it has the effect of giving a seminasal sound to the vowel preceding, that is to say, the vowel is sounded by an emission of the breath partly through the nose and partly through the mouth. The Spanish alphabet has a character *ñ*, called *n* with the *tilde*, as in *España*, pronounced like *ni* in *onion*, *minion*; *gn* in Italian is pronounced in the same way.

Naas (näs), a town in Ireland, County Kildare, 17 miles southwest of Dublin, an ancient place, once the residence of the kings of Leinster. Pop. 3836.

Nabathæans (na-ba-thē'anz), a Semitic race of people who from the fourth century B.C. to about 100 A.D. held a position of importance in Arabia Petræa and the adjacent regions. They were ruled by kings; their capital was Petra, and they carried on a great caravan trade.

Nábha (näb'h*a*), one of the Punjab native states of India, having an area of 966 square miles, with a population of 297,949. The chief town is Nábha, which has a pop. of 18,468.

Nabis (nā'bis), a Spartan who succeeded in making himself king of Sparta in B.C. 207, and reigned with great tyranny and cruelty. He was defeated by Philopœmen at the head of the army of the Achæan League, and was at last killed in Sparta by his own allies, the Ætolians, whom he had called in to his assistance (192 B.C.).

Nablus (nä-blös'), or NABULUS, a town of Palestine, capital of Samaria, 30 miles north of Jerusalem. It is beautifully situated among gardens, orchards and fertile fields, along the base of Mount Gerizim. It is the principal residence of the descendants of the ancient Samaritans, and has some manufactures and a considerable trade. The chief objects of attraction to pilgrims are the tombs of Joshua and Joseph, and Jacob's Well, 3 miles south, on the road to Jerusalem. Pop. estimated at 25,000.

Nabob (nā'bob; a corruption of *nawab*, the plural of *naib*, a deputy), in India, formerly the title of a governor of a province or the commander of the troops; borne, however, by many persons as a mere titular appendage.

Nabonassar (nab-o-nas'ar), a king of Babylon, with whose reign begins an epoch called the *Era of Nabonassar*. It began on February 26, 747 or 746 B.C.

Nacre. See *Mother-of-pearl.*

Nadir (nā'dir), in astronomy, that point of the heavens which is diametrically opposite to the zenith, or point directly over our heads. The zenith and nadir are the two poles of the horizon.

Nadir Shah (nȧ'dėr shȧ), King of Persia, a famous conqueror and usurper, was born in 1688. Having distinguished himself against the Afghans and Turks he acquired the chief power in Persia in 1732, seized the shah, confined and deposed him, and proclaiming his son Abbas, then an infant, in his stead, assumed the title of regent. The young king dying in 1736, Nadir seated himself on the throne as shah. Being invited by some conspirators about the person of the Great Mogul to undertake the conquest of India, he began his march at the head of 120,000 men, and with little resistance reached Delhi in March, 1739. Being exasperated by some tumults on the part of the inhabitants he caused a general massacre, in which upwards of 100,000 persons perished. After this barbarity the victor concluded a peace with the Mogul, whose daughter he married, receiving with her, as a dowry, some of the finest provinces of his empire contiguous to Persia. In this expedition it is supposed that he carried away, and distributed among his officers, valuables to the amount of $560,000,000.

On his return he waged war with equal success against neighboring princes, and at the height of his power his dominions stretched from the Indus and the Oxus to the Euphrates and the Caspian. A conspiracy having been formed against him by the commander of his bodyguard and his own nephew, he was assassinated in his tent in 1747, his nephew, Ali Kuli, succeeding to the throne.

Nadiyá (nad'ē-yä), or NUDDEA, a district in the lieutenant-governorship of Bengal, with an area of 2793 square miles. The Padma or Ganges flows along its northeastern boundary, and other offshots of the great river skirt or flow through the district. Pop. 1,667,491. The chief town is Nadiyá, on the Bhagirathi, a place of sanctity, and seat of indigenous Sanskrit schools. Pop. 10,880.

Naefels (nā'fels), a village in the canton of Glarus, Switzerland, a few miles north of the capital (Glarus), the scene of one of the most famous of Swiss battles, when 1500 men of Glarus defeated a force of from 6000 to 8000 Austrians (1388). Pop. 2525.

Nævius (nē'vi-us), CNEIUS, an early Roman poet, born in Campania between 274 and 264 B.C. He wrote tragedies and comedies after the model of the Greek, and an epic poem upon the Punic war. By the introduction of some of the Roman nobility into his comedies he provoked their anger, was banished from the city, and retired to Utica. He died B.C. 204 or 202. Fragments only of his works have come down to us.

Nævus (nē'vus), or 'MOTHER'S MARK,' a disfigurement which occurs most frequently on the head and trunk, but may also appear on the extremities. It consists essentially of an enlargement of the minute veins, or venous capillaries, which are dilated, and anastomose or unite among themselves to form a vascular patch generally of a deep-red color. The familiar name of 'mother's mark,' or 'longing mark,' is applied from the popular belief that the lesion was the result of fear, fright, unnatural longing, or some such irritation acting upon the mother's constitution, and communicating its effects to the unborn child in the shape of this mark.

Naga Hills (nä'gä), a district of Assam. Area 3070 square miles. It consists largely of unexplored mountain and jungle. The tribes are very unruly, and numerous outrages have called for the intervention of the British government. Pop. 102,402.

Nágapatnam. See *Negapatam.*

Nagasaki (nä'ga-sä'kē), or NANGASA'KI, a city and port in Japan, on the west coast of the island of Kiusiu, beautifully situated on a peninsula at the extremity of a harbor, affording excellent anchorage, and inclosed by hills, up the sides of which a portion

of the town extends. Nagasaki was one of five Japanese ports opened in 1858 to the British and Americans, having been previously open to the Dutch; and in 1869 it and seven others were opened to foreign nations generally. The exports are copper, silk, camphor, tobacco, porcelain, lacquered wares, etc. A dry-dock measuring 460 by 89 feet was opened here in 1879. Pop. (1905) 163,324.

Nagina (*na*-gē'*na*), a town of Hindustan, in Bijnor district, Northwestern Provinces. It manufactures cloth, glass-ware and gun-barrels. It is noted also for its ebony-carving. Pop. 21,412.

Nágpur (näg'pör), or NAGPORE, a town in India, capital of the Central Provinces, and of the division of Nagpur (area, 23,521 square miles; pop. 3,728,063), 440 miles E. N. E. of Bombay. It occupies a low, swampy flat, and is little better than a vast assemblage of huts straggling or huddled together in the most irregular manner. The municipal

VIEW OF NAGASAKI, JAPAN

area includes Sitabaldi Hill, where the British residency with a small cantonment is situated. There are other cantonments at Takli, 2 miles distant, and at Kampthi, the chief one, 9 miles distant. The manufactures include cotton and woolen cloths, and utensils of copper, brass, and other alloys. A bed of coal, estimated to contain 17,000,000 tons, at a depth of 200 feet, has been discovered at Nágpur. There is a trade in opium, hemp, and above all, in cotton, for which this is a great mart. Nágpur was formerly the seat of a line of rajahs, which became extinct in 1853, when their territory was annexed to the British dominions. Pop. 127,734.

Nagy (nåd'y'), a Hungarian word meaning 'great,' occurring in a number of place-names. The chief are: (1) NAGY-KAROLYI, a town in the northeast of Hungary, with manufactures of woolens, linens, etc. The castle of Count NAGY-KAROLYI, a town in the northeast of Hungary, with manufactures of woolens, linens, etc. The castle of Count Károlyi is here. Pop. 15,382.—(2) NAGY-KIKINDA, 35 miles southwest of Szegedin. Pop. 24,843.—(3) NAGY-LAK, in the Maros. Pop. 13,631.—(4) NAGY-SZALONTA (så-lon'tå), about 20 miles southwest of Gross-Wardein. Pop. 14,107. See also *Körös*.

Nahum (nā'hum), one of the twelve minor prophets, the author of a book of prophecies included in the Old Testament. His prophecies relate to the destruction of Nineveh, which he describes in vivid colors. The period in which he lived is, however, uncertain, probably 700-600 B.C.

Naia. See *Naja*.

Naiadæ (nī'a-dē), a nat. order of endogens, consisting of plants living in fresh or salt water in most parts of the world, having cellular leaves with parallel veins and inconspicuous hermaphrodite or unisexual flowers. *Zostera marina* (the grass-wrack) is the most familiar example.

Naiads (nī'adz), in the Greek mythology, nymphs of fountains and brooks, of similar character to the dryads, oreads, etc., analogous to the nixies of the northern mythology.

Naïdidæ (na-id'i-dē), a family or group of water worms, some of them of common occurrence in the mud of ponds and streams.

Nails (nālz), small pointed pieces of metal, generally with round or flattened heads, used for driving into timber or other material for the purpose of holding separate pieces together. They are of many different lengths and shapes. *Brads* used for nailing floors and ceilings have the head only on one side; the small sharp nails with round flat heads, used by saddlers and upholsterers, are called *tacks;* the small sharp taper nails without heads, used by shoemakers, are called *sprigs;* a variety in which the head is large and the spike small are called *hob-nails;* very large nails are called *spikes*. Until a comparatively recent period almost every kind of nail was produced by hand labor alone, each nail being separately forged from a thin rod of iron. These *wrought* nails are preferable, for many kinds of carpenter work, to those made by machinery. Making of wrought nails retains, in many places, the character of a domestic manufacture, the workman being often assisted by the female members of his family. In 1810 a machine was contrived by which nails could be cut from an iron sheet, and headed at one operation, at the rate of 100 per minute. This method was improved until some mills could turn out nails at the rate of 10 million an hour. More recently a method of making nails out of wire has been adopted and the old style cut nails have gone out of use.

Nails, OF ANIMALS, like hairs, are appendages which belong to the category of the exoskeletal elements of the animal frame, or as parts of the skin, of the outer layer of which they are modified appendages. A nail, in fact, is a specialized arrangement of the cells of the epidermis. In man the nails do not inclose the ends of the digits; but in the horse, and 'hoofed' or ungulate quadrupeds generally, the nails assume the form of protective coverings to the digits, and are then known as 'hoofs.' Nails may be produced to form 'claws,' as in birds and carnivorous mammals, while in the sloths they assume a large relative size, and are used as a means in arboreal progression. In the Amphibia—as in some toads, efts, etc.—the nails appear as mere thickenings of the skin at the extremities of the digits. The nails appear about the fifth month of fœtal or embryonic life.

Nain (nān), a town 8 miles from Nazareth, 42 from Jerusalem, at the foot of Mount Hermon, celebrated as the place where Christ restored a dead man to life. The town has now dwindled into a small hamlet named Nein.

Nairn (nārn), a small county in the northeast of Scotland, on the Moray Firth, with an area of 195 sq. miles. The south part of the county is hilly, and composed of gneiss and granite rocks; the lower valleys are occupied by

the Old Red Sandstone, and are of a more fertile nature. The principal rivers are the Findhorn and the Nairn, both having their sources in the county of Inverness, and flowing in nearly parallel courses, S. S. W. to N. N. E. Pop. 9155.—NAIRN, the county town, is the royal burgh and seaport near the mouth of the river of the same name. Its harbor is accessible only to small vessels. Fishing is carried on to a considerable extent, and Nairn is rising into repute as a watering-place. Pop. 5089.

Nairne (nārn), CAROLINE OLIPHANT, BARONESS, a Scottish poetess, belonging to the Oliphants of Gask, born 1766; married to William Murray Nairne, who in 1824 became Baron Nairne; died in 1845. She was the authoress of some exceedingly popular songs, including *The Laird o' Cockpen*, *The Land o' the Leal*, *The Auld House*, etc.

Naja (nä'jä), a genus of serpents, including several that are among the most dangerous of all the venomous snakes. The best known examples of the genus are *N. tripudians*, the cobra de capello of India, and the *N. haje* of Egypt, which is tamed by native jugglers, and is identified by many writers with the asp employed by Cleopatra to bring about her death. See *Cobra*, *Asp*.

Nakhichevan (nȧ-*hich*'e-vȧn) is the name of two towns in Russia. The first is situate on the right bank of the Don, in the government of Ekaterinoslav, 7 miles east of Rostoff. It is well and regularly built, chiefly in the oriental style. Pop. 30,883.—2. A town in the government of Erivan, near the left bank of the Aras, 175 miles south of Tiflis, regularly and substantially built. An Armenian tradition says Noah was its founder, and a mound of earth is still pointed out as his grave. Pop. 8845.

Namaqualand (n ȧ - mä'qwä-land), GREAT, an extensive region in South Africa, extending along the west coast from the Orange River to Walfish Bay, and inland from the west coast to the Kalahari Desert: estimated area, 100,000 square miles. The greater part of this region is bare and barren, but in part it is favorable for the rearing of cattle. Copper ore appears to be in abundance in several localities. The lion, giraffe, rhinoceros, and hippopotamus, the gemsbok, eland, and other large antelopes are still found here. Germany took possession of Great Namaqualand in 1884. See *Namaquas*.

Namaqualand, LITTLE, an electoral division of Cape Colony south of the Orange River. It is a dry and barren region, but derives some importance from its copper mines. The chief mining station is Ookiep, 90 miles from Port Nolluth, with which it is connected by rail. Pop. about 17,000.

Namaquas (nȧ-mä'qwäs), the name given by Europeans to the Hottentot tribes inhabiting Great Namaqualand. They lead a half-pastoral, half-predatory life, yielding allegiance to a number of petty chiefs. Polygamy is universal among them. They are gradually disappearing before the Griquas and other mixed races. Missionaries have been laboring among them for some time.

Namaycush (nam'ā-cush), the great lake trout (*Salvelinus namaycush*), a favorite food fish of the Great Lakes and other northern United States lakes. It grows to 3 feet in length and weighs from 20 to 40 pounds, and is a gamey fish and excellent eating. Also known as Mackinaw trout, bear trout, and other local names.

Names (nāmz), PERSONAL. It is probable that at first all names were significant. Old Testament names are almost all original, that is, given in the first instance to the individual bearing them, and either originated in some circumstance of birth or expressed some religious sentiment, thus—Jacob (supplanter), Isaiah (salvation of Jehovah), Hannah (favor), Deborah (bee), etc. Neither the Hebrews, Egyptians, Assyrians, Babylonians, Persians, nor Greeks had surnames; and in the earliest period of their history the same may be said of the Romans. In course of time, however, every Roman citizen had three, the *prænomen* or personal name, the *nomen* or name of the gens or clan, lastly, the *cognomen* or family name, as Publius Cornelius Scipio. Conquerors were occasionally complimented by the addition of a fourth name or *agnomen*, commemorative of their conquests, as Publius Cornelius Scipio *Africanus*. Greek names refer to the personal appearance or character; and were often supplemented by the occupation, place of birth, or a nickname. Times of great public excitement have had a very considerable influence in modifying the fashion in names. It is impossible to state with any degree of certainty when the modern system of personal nomenclature became general. Surnames were introduced by the Norman adventurers, but were for centuries confined to the upper classes. They became general in Scotland about the twelfth century. In some of the wilder districts of Wales they can hardly be said to have been adopted even yet. The principal sources from

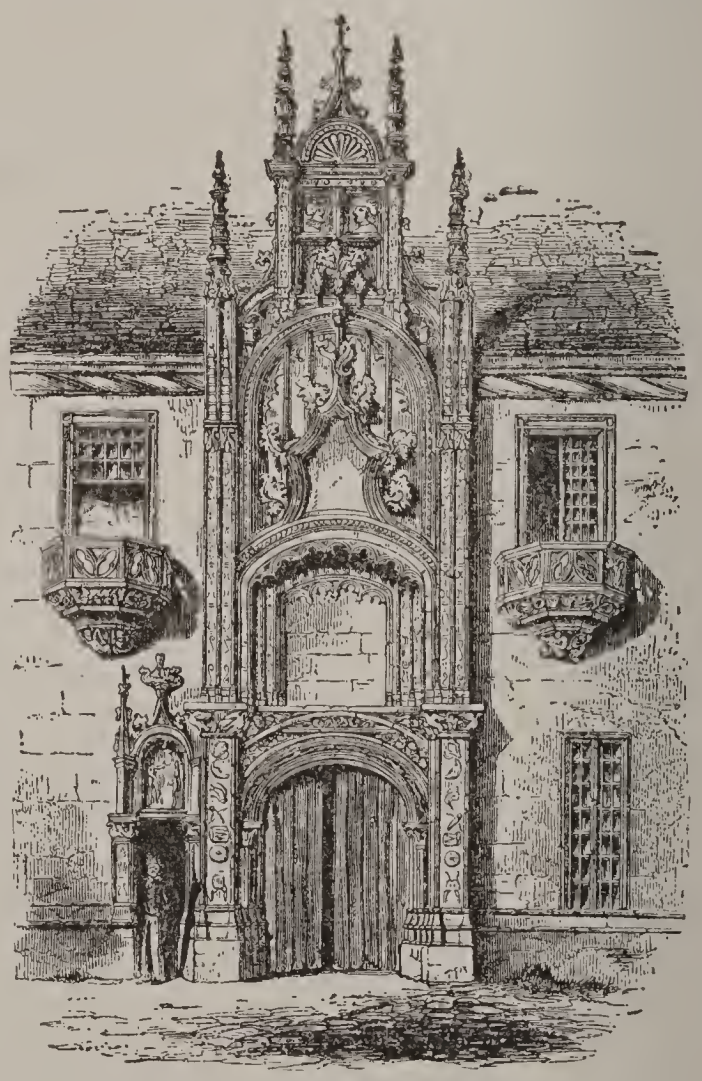
which surnames are derived are personal characteristics (Black, Long, Short), rank, profession, or occupation (Bishop, Knight, Miller), localities, or natural objects (Hill, Dale, Stone), and patronymics (Johnson, Wilson, Andrews). The Hebrews had no surnames proper, but to distinguish two men of the same name they used such forms as Solomon ben David ('Solomon son of David'). The Welsh use the word ap in the same way; Evan ap Richard ('John son of Richard'= Prichard). The Scotch use Mac for the same purpose. In Irish O' signifies grandson or descendant. The same method prevailed in some European nations, as Fitz, in old Norman, signifying son. The addition of the word son at the end of a family name has left its mark in many modern names. In most of the modern nations the wife changes her surname on marriage to that of her husband; in Spain, however, she retains it, while the son may adopt either the paternal or maternal name. It is well settled in the United States, also in Great Britain, that no process of law is necessary to effect a change of personal name, the names originally not being given by law, but established by usage.

Namur (nȧ-mür); (Flemish, *Namen*), a town of Belgium, capital of province of same name, situate at the confluence of the Meuse and Sambre, and at the foot of a bold promontory on which is a fortress. The strategical position of Namur is highly important, and a powerful citadel now occupies the site of the old castle of its dukes. Sieges and bombardments have robbed the town of nearly all its ancient buildings, and only a belfry and a monastery, now used as a court of justice, date back to the middle ages. Don Juan of Austria lies buried in the modern cathedral. The town carries on manufactures of cutlery and hardware, etc. Pop. 31,940.—The province, which has an area of 1413 square miles, is well watered by the Meuse, with its affluents, the Lesse and the Sambre, and is finely diversified with well-wooded offsets of the Ardennes. About one-half of the whole surface is cultivated. The industry and commerce of the province are largely developed. Its cutlery is particularly famous. Pop. 357,759.

Nanaimo (na-nā′mō), a port on the east side of Vancouver Island, where there are important coal-mines. Pop. (1911) 8306.

Nana Sahib, the murderous leader of the Sepoys in the Indian mutiny. He was born in 1825, and adopted by the ruler of the Mahratta state of Bithoor. On the death of the latter the British government refused to recognize Nana's claim to the succession. In May, 1857, there was a mutiny of the Sepoys in Cawnpore, and Nana placed himself at the head of the mutineers. The Europeans in Cawnpore capitulated on a promise that they should be sent down the Ganges in safety. But the men were all shot down and the women and children massacred. (See *Cawnpore.*) Nana was defeated by Sir H. Havelock, and was driven across the frontier into Nepaul. But there all knowledge of him ceases. The general opinion is that he escaped into Central Asia.

Nancy (näṅ-sē), a town of France, capital of the dep. Meurthe-et-Moselle, situated in a fertile plain, near the left bank of the Meurthe. It is divided into the old and the new town and several suburbs, and has wide and straight streets, handsome squares, and fine promenades, a triumphal arch, numerous statues, the palace (partly old)



Doorway of Ducal Palace, Nancy.

of the former dukes of Lorraine, an elegant specimen of Flamboyant Gothic, cathedral, several interesting churches, etc. The Church of St. Epure, recently com-

pleted, is very large, and is accounted one of the finest specimens of modern Gothic in France. Nancy is the see of a bishop, and has a university (with four faculties), a public library, a museum of paintings, botanical gardens, etc. The manufactures consist of broadcloth and other woolen stuffs; cotton spinning and weaving; hosiery, lace, all kinds of embroidery, stained paper, etc. The trade is extensive. At Nancy, in 1477, was fought the great battle between René, duke of Lorraine, and Charles the Bold of Burgundy, who was defeated and slain. From 1870 to 1873 Nancy was occupied by Germans. Pop. 98,302.

Nandu (nan'dö), the South American ostrich, a bird of the genus *Rhea*. See *Rhea*.

Nangasaki. See *Nagasaki*.

Nankeen (nan-kēn'), or NANKIN', a sort of cotton cloth, usually of a yellow color, originally manufactured and imported from Nanking in China. The peculiar color of these cloths is natural to the cotton (*Gossypium religiosum*) of which they are made. Nankeen is now imitated in most other countries where cotton goods are woven.

Nanking (nän-king'; that is, 'Southern Capital,' as opposed to Peking, 'Northern Capital'), a city of China, capital of the province of Kiangsu, near the right bank of the Yangtse-Kiang, 130 miles f.om its mouth and 560 miles south by east of Peking, with which it communicates by the Imperial Canal. It is 18 miles in circumference, and is surrounded by a wall generally above 40 feet high. It was at one time the capital of the Chinese Empire; but when the seat of government was transferred to Peking, about the end of the fourteenth century, it lost its importance and a great part of its population. Although an open river port few foreigners are resident. It was at Nanking that the British compelled the Chinese to submit to their terms of peace in 1842. Pop. estimated at 140,000.

Nanosaurus (nan-o-sạ'rus), NANOSAUR, a fossil lizard-like animal belonging to the group Deinosauria, discovered in North America, and about the size of a cat.

Nansen (nan'sen), FRIDTJOF, an Arctic explorer, was born in Norway in 1861. In 1888-89 he crossed Greenland in its lower section; on his return he published a number of scientific works. Under the auspices of the Norwegian government he sailed in 1893 from Christiana in the *Fram* (a specially built vessel) to attempt the discovery of the North Pole by allowing his vessel to freeze in the ice and drift northward. On March 14, 1895, in lat. 83° 59′, he and Lieut. Johansen proceeded north on sledges, and on April 8th reached 86° 14′ N. and long. 95° E. being 2° 50′ nearer the pole than any previous explorer. On his return he delivered lectures in the United States and Great Britain, which were received with enthusiasm.

Nantes (nants; Fr. *nänt*), a town of France, on the Loire. The place is noted for the beauty of its streets and public buildings, and its quays line the banks of the rivers for nearly 2 miles. The public edifices most deserving of notice are the cathedral, in the Flamboyant style, dating from the fifteenth century, and containing many fine monuments; the castle, an edifice of the fourteenth century partly modernized in the sixteenth, with massive round towers; the Hôtel de Ville, the exchange, the theater, museum of natural history, picture gallery, the courts of justice and the Hôtel Dieu or infirmary. The chief industries are shipbuilding, and the manufacture of ships' boilers and machinery, linens, cottons, sail-cloth, flannel, chemicals, leather, ropes, soap, etc. Nantes is a flourishing seaport; but part of the foreign trade centers in St. Nazaire, at the mouth of the Loire. Before the conquest of Gaul by the Romans Nantes was a place of some note. For a long time it formed one of the most valuable possessions of the dukes of Brittany; but in 1499 the heiress of the dukedom, Anne of Brittany, having here married Louis XII, it passed with the rest of her possessions to the crown of France. In 1793 it was the scene of some of the most atrocious massacres of the French revolution, the *Noyades* or drownings of the monster Carrier being perpetrated here. Men, women and children were destroyed also by shooting. As many as 600 persons are known to have perished in one day, and it is estimated that in the town and surrounding country 30,000 people were destroyed. Pop. 118,244.

Nantes, EDICT OF, was signed by Henry IV in that city, April 30, 1598. It allowed the Protestants the free exercise of their religion, and threw open to them all offices of state. This edict was formally revoked by Louis XIV, on October 20, 1685. As a consequence of this fatal act for France about 400,000 Protestants emigrated to Britain, Holland and other Protestant countries.

Nanticoke (nan'ti-kōk), a town of Luzerne County, Pennsylvania, 8 miles W. S. W. of Wilkes-Barre. Mining anthracite coal is its chief busi-

ness. It has silk mills and a stocking factory. Pop. 18,877.

Nantucket (nan-tuk'et), an island of Massachusetts, 18 miles south of Cape Cod, 15 miles long and from 3 to 4 miles wide. The town of Nantucket is situated on the north side of the island, and has a deep and secure harbor. The climate is mild in winter and cool in summer, and the island has of late become a favorite summer resort. Pop. 3006.

Nantwich (nant'wich), a market town of England, in Cheshire, on the River Weaver, 19 miles southeast of Chester City and 4 miles southwest from Crewe. There is a fine cruciform church. It was once famous for its salt works, but at present its staple manufacture is boots and shoes. Pop. 7816.

Nanuk (nan'uk), the founder of the Sikh religion, born near Lahore in 1469. He taught men to worship the One Almighty Invisible God, to live virtuously, and to be tolerant of the failings of others. He died in 1539.

Napa (nä'pa), a city, capital of Napa County, California, on the Napa River, 39 miles N. by E. of San Francisco. There are mineral springs in the vicinity, and the city has tanneries, woolen and planing mills and large wineries. The state insane asylum is located here. Pop. 5791.

Naphtali (naf'tà-li; Hebrew, 'my wrestling'), the sixth son of Jacob, and the head of one of the twelve tribes. The tribe had its full share in repelling the incursions of the Canaanites during the first centuries of the conquest, but disappears from history when Tiglath-pileser overran the north of Israel and bore away the whole of the population to Assyria. Under the title of Galilee the district occupied by the tribe became in New Testament times more famous than it had ever been before.

Naphtha (nap'tha, naf'tha), a term which includes most of the inflammable liquids produced by the dry distillation of organic substances. *Mineral or native naphtha*, or *petroleum*, is an inflammable liquid which is found in very many countries, but especially in California, and other American States and at Baku on the Caspian Sea. It consists of a mixture of hydrocarbons chiefly belonging to the paraffin series, but it also contains members of the olefine and of the benzine series. *Boghead naphtha*, which is also known as *photogen* and *paraffin oil*, is obtained by distilling certain minerals allied to coal, such as the Torbane Hill mineral or Boghead coal, found at Bathgate in Scotland. *Coal naphtha* is obtained by the distillation of coal-tar. After the *light oil* has been separated it is shaken with caustic soda and afterwards with sulphuric acid. The liquid portion is then run off and rectified. *Shale naphtha* is a mixture of paraffins obtained by distilling bituminous shales. When petroleum is distilled, that portion which distills below 76° C. is sold as *petroleum spirit* or *petroleum ether*, and is used for dissolving India-rubber and making varnishes. The next fraction of the distillate is sold under the names benzoline, paraffin oil, or mineral sperm oil. Benzine occurs in petroleum, but is more abundant in the light oil obtained in distillation of coal-tar. Nitro-benzine is largely employed in the preparation of aniline.

Naphthalene (nap'tha-lēn), a crystalline hydrocarbon with an odor of coal-gas, occasionally deposited in gas-pipes in cold weather. It is a very common product of the action of a high temperature upon substances rich in carbon; coal and wood yield it on distillation; marsh-gas, alcohol vapor, and ether vapor deposit crystals of naphthalene when passed through a red-hot tube. When coal-tar is distilled and the temperature has risen to about 200° C., the distilled liquid partly solidifies on cooling from the crystallization of naphthalene. This portion is pressed to expel the liquid part and boiled with alcohol, which deposits the naphthalene as it cools. Naphthalene red was discovered in 1867; it comes into commerce under the name of *magdala* red, in the form of a black-brown crystalline powder.

Naphthyl (naf'thil), a hydrocarbon obtained, together with other products, by heating naphthalene with a mixture of manganese dioxide and sulphuric acid diluted with twice its weight of water. *Naphthol*, or *naphthyl alcohol*, is a derivative of naphthyl. Dinitronaphthol is produced from *naphthol*, and is one of the most beautiful and permanent of yellow dyes, coloring silk and wool in all shades from light lemon to deep gold-yellow.

Napier (nā'pi-ėr), a town of New Zealand, situated on Hawke's Bay, in North Island. The district is principally a grazing one, large quantities of wool being grown. Tinned and frozen meat are also exported. Pop. 9454.

Napier (nā'pi-ėr), Sir Charles James, a British general and administrator, born in 1782. He entered the army in 1794, and served in Ireland and Portugal, being present at Coruña, where he was wounded and taken prisoner

in 1809. In 1811, when again at liberty, he returned to the Peninsula, and served through the war, being severely wounded in several battles. In 1812 he was made lieutenant-colonel, and in the following year served in the expedition to the Chesapeake. He missed the battle of Waterloo, which took place three days before he reached the scene of action. On the peace a period of inactivity ensued, varied only by his appointment as governor of the island of Cephalonia, and by a short command of the military district of the north of England. In 1837 he was made major-general; in 1838 K.C.B. In 1841 he was appointed to the chief command in

General Sir Charles Napier.

the Presidency of Bombay, with the rank of major-general, and was shortly afterwards called to Scinde. Here he gained the victories of Meanee and Hyderabad, and was afterwards made governor of Scinde, which he administered till 1847. He had quarreled with the directors of the East India Company, but during a panic caused by the want of anticipated success in the war with the Sikhs in 1849 his services were again required, and he sailed once more for the East, as commander-in-chief of all the forces in India. Before he arrived Lord Gough had brought the Sikh war to a triumphant termination, and no special work remained for Sir Charles Napier to perform. Having returned to England he died in 1853.

Napier, Admiral Sir Charles, a British naval commander, cousin of Sir Charles James and Sir William Francis Napier, was born in 1786; died in 1860. He entered the navy as midshipman in 1799, was promoted lieutenant in 1805, and sent to the West Indies, where he served in the operations against the French. He was promoted commander by Admiral Cochrane in August, 1809, and in 1811 was employed in Portugal and along the coast of Southern Italy. In 1813 he was attached to the North American squadron, and in August of the following year he led the expedition up the Potomac River. At the conclusion of the war he was made a C.B. In 1833 he accepted the command of the Portuguese Constitutional fleet, and effected the establishment of Donna Maria on the throne. Returning to England, he was appointed in 1839 to the command of the *Powerful*, and ordered to the Mediterranean, where, on the outbreak of the war between Mehemet Ali and the Porte, and the coöperation of Britain with Russia and Austria on behalf of the latter power, Sir Charles Napier performed some of his most gallant exploits, including the storming of Sidon and the capture of Acre. Having blockaded Alexandria, he concluded on his own responsibility a convention with Mehemet Ali, by which the latter and his family were guaranteed in the hereditary sovereignty of Egypt on resigning all claim to Syria. On his return to England he was created K.C.B. In 1841 he was elected member for Marylebone. In 1847 he received the command of the Channel Fleet as rear-admiral; and in 1854, on the commencement of the Russian war, he was nominated to the command of the Baltic fleet, being now a rear-admiral. In this capacity he accomplished little beyond the capture of Bomarsund. He sat in parliament as member for Southwark from 1855 till his death. He published a series of *Letters to Lord Melville on the State of the Navy;* an account of the *War in Portugal* and of the *War in Syria;* and numerous contributions to the *United Service Magazine.*

Napier, John, Laird of Merchiston, near Edinburgh, the inventor of logarithms, was born in 1550; died in 1617. He was educated at St. Andrew's, traveled on the Continent, and ultimately settled down at the family seats of Merchiston, near Edinburgh, and Gartness, in Stirlingshire, as a recluse student. In 1614 he published his book of logarithms (*Logarithmorum Canonis Descripto;* Edinburgh, 4to). The invention was very soon known over all Europe, and was everywhere hailed with admiration by men of science. Napier followed it up, in 1617, by publishing a small treatise, giving an account of a method of performing the operations of multiplication and division by means of a number of small rods. These materials for calculation maintained for many years a place in

science, and are known by the appellation of Napier's Bones. His eldest son, ARCHIBALD, who succeeded him, was raised to the rank of a baron by Charles I in 1627, under the title of Lord Napier, which is still borne by his descendants.

Napier, ROBERT CORNELIUS, Baron Napier of Magdala, born in Ceylon December 6, 1810, son of Major C. F. Napier. He entered the Royal Engineers in 1826, and served in the Sutlej campaign in 1845-46, where he was severely wounded. In 1848-49 he served in the Punjab, and was chief engineer at the siege of Mooltan. He was chief of staff to Sir J. Outram in 1857, and was prominent in the relief of Lucknow at the beginning of the Indian mutiny. In the Chinese war of 1860 he commanded a division with the local rank of major-general. In October, 1867, he was intrusted with the command of the Abyssinian expedition, and captured Magdala, April 13, 1868. He was then made Baron Magdala and G. C. B. In 1870 he was made commander-in-chief in India, with the rank of general, became governor of Gibraltar in 1876, was made field-marshal in 1883, and Constable of the Tower in 1887. He died in 1890.

Napier, SIR WILLIAM FRANCIS PATRICK, a British officer, brother of Sir Charles James Napier, the conqueror of Scinde, was born in 1785; died in 1860. At the age of fourteen he entered the army, served at the siege of Copenhagen, and with his brothers Charles and George took a distinguished part in the Peninsular campaigns, became lieutenant-colonel in 1813, and colonel in 1830. Some years after the conclusion of peace he commenced his celebrated *History of the Peninsular War*, the publication of which began in 1828, and extended over the intermediate period till 1840. In 1841 Colonel Napier was advanced to the rank of major-general; he was appointed lieutenant-governor of Guernsey the following year, and in 1848 created a K.C. B. He also wrote *History of the Conquest of Scinde*, *History of the Administration of Scinde*, *Life of Sir Charles James Napier*, etc.

Naples (nā'plz; Italian, *Nap'oli*), a city in Southern Italy, the largest in the kingdom, situated on the northern shore of the beautiful Bay of Naples, about 160 miles from Rome. Its site is magnificent, being on the side of a nearly semicircular bay, partly along the shore, and partly climbing the adjacent slopes, bounded on the one side by the picturesque heights of Posilipo, and on the other by the lofty mass of Vesuvius, while the background is rich in natural beauty. The environs are densely peopled, towns and villages being numerous around the bay as well as inland. The city is divided into two unequal parts by a steep ridge proceeding from the height on which stands the castle of St. Elmo, and terminated by a rocky islet surmounted by the Castello dell' Ovo. The largest and most ancient part of Naples lies to the S. E. of these heights. This now forms the business quarter, and is intersected from N. to S. by the main street, the Toledo, now Via di Roma. The western and more modern part of the city is the fashionable quarter, has a superior situation, and commands magnificent views. The chief street in this quarter is the Corso Vittorio Emanuele, 2½ miles in length. The city measures about 3 miles in length by 2 in breadth; the streets are mostly well-paved with lava or volcanic basalt, and the houses are large, lofty, and solidly built, and have flat roofs. There are few remains of ancient times, but there are five castles, S. dell' Ovo, Nuovo, dell Carmine, Capuano, Elmo, and the gates Porta del Carmine and Capuano, all of mediæval construction. Among the more remarkable public edifices is the cathedral, dating from 1272, a large Gothic building erected on the site of two temples dedicated to Neptune and Apollo. It is held in high veneration in consequence of possessing the relics of St. Januarius or Gennaro. Other edifices are the church De' Santi Apostoli, said to have been originally founded by Constantine the Great on the site of a temple of Mercury, and, though subsequently rebuilt, still very ancient; the church of St. Paul, built in 1817-31 in imitation of the Pantheon at Rome; the Palazzo Reale (Royal Palace, a building of great size in the lower part of the town); the palace of Capo di Monte, situated on a height in the outskirts; the old palace, where the courts of justice now hold their sittings; the Palazzo dei Publici Studj, formerly occupied by the university, but now converted into the Museo Nazionale, a museum containing not only a valuable library of 275,000 volumes and many rare MSS., but also the older and more recent collections belonging to the crown, the Farnese collection of paintings and sculpture from Rome and Parma, and an unequaled collection of gems, bronzes, vases, etc., chiefly obtained from the excavations of Pompeii and Herculaneum; numerous theaters, of which that of San Carlo is remarkable for its magnificence, and is one of the largest in existence. Naples has a university, dating from 1224, and attended by over 3000 students; many other educational institutions, and numer-

ous foundations. The manufactures, which are numerous but individually unimportant, include macaroni, woolens and cottons, silks known as *gros de Naples*, glass, china, musical instruments, flowers and ornaments, perfumery, soap, chemicals, machinery, etc. The harbor accommodation has recently been extended, and the trade is important. The exports consist chiefly of bones, cream of tartar, hoops, linseed, hemp, wheat, figs, gloves, liquorice, madder, coral, macaroni, oil, wine, wool, tallow, rags and silk, raw, dyed and manufactured. Naples is one of the most densely populated cities of Europe, and one of the most peculiar features of the city is its unique population and the universal publicity in which life is passed. In the environs are situated the tomb of Virgil, the ancient ruined cities of Herculaneum and Pompeii, the remains of Roman temples, villas, palaces and tombs, together with the physical phenomena of Vesuvius. Pop. 547,503.

History.—Naples was founded by a Greek colony from the town of Cumæ many centuries before Christ. It took the name of Neapolis ('New City') to distinguish it from a still older Greek city adjoining called *Parthenŏpē*. It passed to the Romans in 290 B.C. In 536 A.D. it was taken by Belisarius, and was pillaged by Totila in 542. In 1130 the Norman Robert Guiscard united the south of Italy and the adjacent island of Sicily into one political unity and from that period the history of Naples ceases to be the history of a city, but becomes the history of a kingdom forming part of the Kingdom of the Two Sicilies, Naples being recognized as the metropolis. In the year 1189 the kingdom passed from the Norman to the Suabian race. In 1266 Charles of Anjou defeated the Suabians, and was crowned king of the Two Sicilies. The kingdom was ruled by this dynasty until 1441, when it came under the dominion of the princes of Aragon. In the early part of the sixteenth century it came into the possession of Spain, which governed it by viceroys until 1707. Under the rule of the Spanish viceroys broke out the famous insurrection under Masaniello in 1647. It was similarly governed by Austria until 1735, when it was erected into an independent monarchy in favor of Don Carlos, or Charles of Bourbon. On the latter's accession to the throne of Spain, in 1759, he was succeeded by his son Ferdinand IV. In 1798 the French republicans entered Naples, which became a republic; but a loyalist rising led to the return of the king. His reign was again interrupted in 1806, when Napoleon succeeded in placing first his brother Joseph, and on Joseph's removal to Spain, his brother-in-law Murat, on the throne of Naples. In 1815 Ferdinand regained his throne, and changed his title to Ferdinand I. Upon his death, in 1825, he was succeeded by Francis I, who died in 1830. This prince was followed by his son Ferdinand II, notorious under the nickname of *Bomba*. (See *Ferdinand I* and *II.*) He died in 1859, and his son, Francis II, was his successor. The latter continued the abuses of the old régime, and in the revolution that broke out in 1860 under the guidance of Garibaldi he was deposed, and Naples and Sicily were added to the Kingdom of Italy.

Naples, Bay of (anciently, *Crater Sinus*), on the west coast of Italy, in the Mediterranean, extending for about 35 miles from the Capo di Miseno, its N. W. boundary, to the Punta della Campanella, its S. E. limit. It is separated from the open sea by the islands of Procida, Ischia and Capri. Its shores have for ages been the scene of powerful volcanic agency, and the scenery has long been celebrated for its beauty and grandeur. Mount Vesuvius is the most striking and distinctive feature.

Naples-yellow, a pale golden-yellow pigment composed of the oxides of lead and antimony. It is employed not only in oil-painting, but also

NAPOLEON AT THE TOMB OF THE PHARAOHS

for porcelain and enamel. Chromate of lead is sometimes used as a substitute for this color.

Napoleon I (na-pō'le-on), Emperor of the French, was born August 15, 1769, at Ajaccio, Corsica, and was the son of Charles Bonaparte, an advocate, and of Letizia Ramolino. (See *Bonaparte.*) In his tenth year he was sent to the military school of Brienne, and after a short time spent at that of Paris he received, in 1785, his commission as lieutenant of artillery. During the development of the revolution Napoleon took the popular side, but in a quiet and undemonstrative way. In 1792 he became captain of artillery, and in 1793 he was sent, with the commission of lieutenant-colonel of artillery, to assist in the reduction of Toulon, then in the hands of the British. The place was captured (December 19) entirely through his strategic genius; and, in the following February, he was made a brigadier-general of artillery. In 1795, when the mob of Paris rose against the Convention, Napoleon was made commander of the 5000 troops provided for its defense. He had only a night to make arrangements, but next morning he scattered the mob with grapeshot, disbanded the national guard, disarmed the populace, and ended the outbreak. On March 9, 1796, he married Josephine Beauharnais, and soon after he had to depart to assume the command given him of the army of Italy against the forces of Austria and Sardinia. After a series of victories, culminating in that of Lodi (May 10), Naples, Modena and Parma hastened to conclude a peace, the pope was compelled to sign an armistice, and the whole of Northern Italy was in the hands of the French. Army after army sent by Austria was defeated (at Roveredo, Bassano, Arcole, Rivoli, etc.); Napoleon carried the war into the enemy's country; and by the Peace of Campo Formio, which followed (October 17, 1797), Austria ceded the Netherlands and Lombardy, and received the province of Venetia. The pope had previously been forced to cede part of his dominions.

In December, 1797, Napoleon returned to Paris. About this time the Directory determined to invade Egypt, as a preliminary step to the conquest of British India. Napoleon was put in command of the expedition, and on July 1, 1798, he landed at Alexandria. This city fell on the 4th of July, and Cairo was taken on the 24th, after the sanguinary battle of the Pyramids. On August 4th, Nelson annihilated the French fleet in the Bay of Aboukir. All means of return to Europe for the French were thus cut off; but Napoleon having suppressed with rigor a riot at Cairo, advanced to attack the Turkish forces assembling in Syria. He took El Arish and Gaza, and stormed Jaffa. But after sixty days' siege he was compelled to abandon the attempt to capture Acre, which was defended by a Turkish garrison under Djezzar Pasha, assisted by Sir Sydney Smith and a small body of English sailors and marines. He reëntered Cairo on June 14, 1799, and on the 25th of July attacked and almost annihilated a Turkish force which had landed at Aboukir. On the 22d of August he abandoned the command of the army to Kléber, and embarking in a frigate, landed at Fréjus, France, October 9, having eluded the English cruisers. He hastened to Paris, secured the cooperation of Moreau and the other generals then in the capital, and abolished the Directory on the 18th and 19th Brumaire (November 9-10). A new constitution was then drawn up chiefly by the Abbé Siéyès, under which Napoleon was made first consul, with Cambacérès and Lebrun as second and third consuls. From this time he was virtually ruler of France.

Napoleon's government was marked by sagacity, activity and vigor in the administration of civil affairs, and so far was highly beneficial to France. But war was his element, and in 1800 he resolved to strike a blow at Austria. Having executed a daring march into Italy across the Great St. Bernard, he defeated the Austrians at Marengo, and after the decisive battle of Hohenlinden, Austria obtained peace by the Treaty of Lunéville, 1801. Treaties were subsequently concluded with Spain, Naples, the pope, Bavaria, Portugal, Russia, Turkey, and, finally, on March 27, 1802, the treaty known as that of Amiens was signed by Britain. In 1802 Napoleon was proclaimed by a decree of the senate consul for life, and in 1804 he had himself crowned as emperor, upwards of 3,000,000 votes of the people being given in favor of this measure. To this period belongs the famous body of laws known as the *Code Napoléon.* See *Code.*

In 1803 war had again broken out with Britain, and Napoleon collected an army and flotilla with the purpose of invading England. In 1805 Britain, Russia, Austria and Sweden united against Napoleon, who at once gave up his purpose of invasion, marched across Bavaria at the head of 180,000 men, and compelled the Austrian General Mack to capitulate at Ulm with 23,000 men (October 20), the day before Nelson's great victory at Trafalgar. On November 13 he entered

Vienna, and on December 2, having crossed the Danube, he completely routed the allied Russian and Austrian armies at Austerlitz. The Austrian emperor instantly sued for peace, giving up to France all his Italian and Adriatic territories. In February, 1806, a French army occupied the continental part of the Neapolitan states, of which Joseph Bonaparte was declared king on the deposition of their former sovereign. Another brother of the emperor, Louis, was made King of Holland. Various districts in Germany and Italy were erected by the conqueror into dukedoms and bestowed upon his most successful generals. This brought him into collision with Prussia, and war was declared on October 8, On the 14th Napoleon defeated the enemy at Jena, while his general, Davoust, on the same day gained the victory of Auerstädt. On the 25th Napoleon entered Berlin and issued the celebrated Berlin Decrees, directed against British commerce. He then marched northwards against the Russians, who were advancing to assist the Prussians. At Pultusk (December 28) and at Eylau (February 8, 1807) he met with severe checks; but on June 14 was fought the battle of Friedland, which was so disastrous to the Russian armies that Alexander was compelled to sue for an armistice. On July 7 the Peace of Tilsit was concluded, by which the King of Prussia received back half of his dominions, and Russia undertook to close her ports against British vessels. The Duchy of Warsaw was erected into a kingdom and given to the King of Saxony; the Kingdom of Westphalia was formed and bestowed upon Jérôme, Napoleon's youngest brother; and Russia obtained a part of Prussian Poland, and by secret articles was allowed to take Finland from Sweden. As Portugal had refused to respect the Berlin Decrees, Napoleon sent Junot to occupy Lisbon (November 30, 1807). The administrative affairs of Spain having fallen into confusion, Napoleon sent an army under Murat into that kingdom, which took possession of the capital, and by the Treaty of Bayonne, Charles IV resigned the Spanish crown, which was given to Joseph Bonaparte, Murat receiving the vacant sovereignty of Naples. The great body of the Spanish people rose against this summary disposal of the national crown, and Britain aided them in their resistance. Thus was commenced the Peninsular war, which lasted seven years. A French squadron was captured by the British at Cadiz (June 14, 1808); General Dupont surrendered at Baylen with 18,000 men (July 22); Junot was defeated by Sir Arthur Wellesley (Wellington) at Vimeira (August 21). But Napoleon rushed to the scene of action in October at the head of 180,000 men, and entered Madrid in spite of all resistance by the Spaniards on December 4. The British troops, now under Sir John Moore, were driven back upon Corunna, where they made a successful stand, but lost their general (January 16, 1809). In the meantime Austria again declared war and got together an army in splendid condition under the Archduke Charles. Napoleon hurried into Bavaria, encountered the archduke at Eckmühl (April 22), and completely defeated him; on May 13 he again entered Vienna. On May 21st and 22d he was himself defeated at Aspern and Esslingen; but on July 6 the Austrians were crushed at Wagram, which enabled Napoleon to dictate his own terms of peace; these were agreed to on October 14 at Schönbrunn. On his return to Paris, Napoleon had himself divorced from Josephine, for the reason that she had borne him no children, and on April 2, 1810, he was married to the Archduchess Maria Louisa of Austria. The fruit of this union was a son. (See next article.)

The years 1810 and 1811 were the period of Napoleon's greatest power. On the north he had annexed all the coast line as far as Hamburg, and on the south Rome and the southern Papal provinces. But now the tide began to turn. Russia showed a disinclination to carry out the continental blockade and give effect to the Berlin Decrees; so, in May, 1812, Napoleon declared war against that country, and soon invaded it with an army of about 500,000 men. The Russians retired step by step, wasting the country, carrying off all supplies, and avoiding as far as possible general engagements. The French pushed rapidly forward, defeated the Russians at Borodino and elsewhere, and entered Moscow only to find the city on fire. It was impossible to pursue the Russians farther, and after waiting for some time in Moscow in vain hope of a proposal of peace from the Russian emperor, nothing remained but retreat. The winter proved uncommonly severe, and swarms of mounted Cossacks incessantly harassed the French, now sadly demoralized by cold, famine, disease and fatigue. Of the invaders only about 25,000 succeeded in escaping from Russia. Napoleon immediately ordered a fresh conscription, but the spirit of Europe was now fairly roused. Another coalition, consisting of Prussia, Russia, Great Britain, Sweden and Spain, was formed,

which, early in 1813, sent its forces towards the Elbe. Napoleon had still an army of 350,000 in Germany. He defeated the allies at Lützen, at Bautzen, and at Dresden; but the last was a dearly-bought victory for the French, who were now so outnumbered that their chief was compelled to fall back on Leipzig. There he was hemmed in, and in the great 'Battle of Nations,' which was fought on the 16th, 18th and 19th of October, he was completely defeated. He succeeded in raising a new army, and from January to March, 1814, he confronted the combined hosts of the allies. But numbers were against him; and Wellington rapidly advanced upon Paris from the south. On March 30 the allies captured the fortifications of Paris, and on the 31st the Emperor Alexander and Wellington entered the city. On April 4 Napoleon abdicated at Fontainebleau. He was allowed the sovereignty of the island of Elba, with the title of emperor and a revenue of 6,000,000 francs, and Louis XVIII was restored. After a residence of ten months he made his escape from the island, and landed at Fréjus on March 1, 1815. Ney and a large part of the army joined him, and he made a triumphal march upon Paris; but it was mainly the army and the rabble that he now had on his side. The allied armies once more marched towards the French frontier, and Napoleon advanced into Belgium to meet them. On June 16 he defeated Blücher at Ligny, while Ney held the British in check at Quatre-Bras. Wellington fell back upon Waterloo, where he was attacked by Napoleon on the 18th, the result being the total defeat of the French. The allies marched without opposition upon Paris. Napoleon abdicated in favor of his son, and tried to escape from France, but failing, he surrendered to the captain of a British man-of-war. With the approval of the allies he was conveyed to the island of St. Helena, where he was confined for the rest of his life. He died in May, 1821, and was buried in the island, but in 1840 his remains were transferred to the Hôtel des Invalides at Paris.

Napoleon II, Napoleon François Joseph Charles Bonaparte, only son of the preceding, was born in Paris in 1811; died at Schönbrunn in 1832. In his cradle he was proclaimed King of Rome. On the first abdication of the emperor he accompanied his mother, Maria Louisa of Austria, to Vienna. His title there was Duke of Reichstadt. He never assumed the title of Napoleon II; but on the accession of his cousin Louis Napoleon in 1852, some title being necessary, the late emperor took that of Napoleon III, which being recognized by the governments of Europe, implied the recognition of the former title.

Napoleon III, Charles Louis Napoleon Bonaparte, Emperor of the French, was born at Paris in 1808; died at Chislehurst, England, in 1873. He was the youngest son of Louis Bonaparte, brother of Napoleon I and King of Holland, and of Hortense de Beauharnais. His early life was spent chiefly in Switzerland and Germany. By the death of his cousin, the Duke of Reichstadt (Napoleon II, see above), he became the recognized head of the Bonaparte family, and from this time forward his whole life was devoted to the realization of a fixed idea that he was destined to occupy his uncle's imperial throne. In 1836 an attempt was made to secure the garrison of Strasburg, but the affair turned out a ludicrous failure. The prince was taken prisoner and conveyed to Paris, and the government of Louis Philippe shipped him off to the United States. The death of his mother brought him back to Europe, and for some years he was resident in England. In 1840 he made a foolish and theatrical descent on Boulogne; was captured, tried, and sentenced to perpetual confinement in the fortress of Ham. After remaining six years in prison he escaped and returned to England. On the outbreak of the revolution of 1848 he hastened to Paris, and securing a seat in the National Assembly he at once commenced his candidature for the presidency. On the day of the election, December 10th, it was found that out of 7,500,000 votes Louis Napoleon had obtained 5,434,226; Cavaignac, who followed second, had but 1,448,107. On the 20th the prince-president, as he was now called, took the oath of allegiance to the republic. He looked forward to a higher position still, however, and pressed for an increase of the civil list from 600,000 francs first to 3,000,000, then to 6,000,000, with his term of office extended to ten years, and a residence in the Tuileries. At last, on the evening of December 2, 1851, the president declared Paris in a state of siege, a decree was issued dissolving the assembly, 180 of the members were placed under arrest, and the people who exhibited any disposition to take their part were shot down in the streets by the soldiers. Another decree was published at the same time ordering the reëstablishment of universal suffrage, and the election of a president for ten years. When the vote came to be taken, on the 20th and 21st of the same

month, it was discovered that 7,439,216 suffrages were in favor of his retaining office for ten years, with all the powers he demanded, while only 640,737 were against it. As soon as Louis Napoleon found himself firmly seated he began to prepare for the restoration of the empire. In January, 1852, the National Guard was revived, a new constitution adopted, and new orders of nobility issued; and at last, on December 1, 1852; Louis Napoleon Bonaparte was proclaimed emperor under the title of Napoleon III. On January 29, 1853, the new sovereign married Eugénie Marie de Montijo, countess de Teba; the result of this union being a son, Napoleon-Louis, born March 16, 1856. In March, 1854, Napoleon III, in conjunction with England, declared war in the interest of Turkey against Russia. (See *Crimean war.*) In April, 1859, hostile relations developed between Austria and Sardinia, and Napoleon took up arms in support of the Sardinian cause. The allies defeated the Austrians at Montebello, Magenta, Marignano and Solferino. By the terms of the Peace of Villafranca Austria ceded Lombardy to Italy, and the provinces of Savoy and Nice were given to France in recognition of her powerful assistance (March 10, 1860). In 1860 the emperor sent out an expedition to China to act in concert with the British; and in 1861 France, England and Spain agreed to despatch a joint expedition to Mexico for the purpose of exacting redress of injuries, but the English and Spaniards soon withdrew. The French continued the quarrel, and an imperial form of government was initiated, Maximilian, archduke of Austria, being placed at its head with the title of emperor. Napoleon, however, withdrew his army in 1867 in response to the stern demand of the United States, and the unfortunate Maximilian, left to himself, was captured and shot. On the conclusion of the Austro-Prussian war of 1866 Napoleon, jealous of the growing power of Prussia, demanded a reconstruction of the frontier, which was peremptorily refused. The ill feeling between the two nations was increased by various causes, and in 1870, on the Spanish crown being offered to Leopold of Hohenzollern, Napoleon demanded that the King of Prussia should compel that prince to refuse it. Notwithstanding the subsequent renunciation of the crown by Leopold war was declared by France (July 19, 1870). (See *Franco-German war.*) On July 28, Napoleon set out to take the chief command, but his forces were illy prepared and were everywhere defeated, with the result that, on September 2, the army with which he was present was compelled to surrender at Sedan. One of the immediate consequences of this disaster was a revolution in Paris. The empress and her son secretly quitted the French capital and repaired to England, where they took up their residence at Camden House, Chislehurst. Here they were rejoined by the emperor (who had been kept a prisoner of war for a short time) in March, 1871, and here he remained till his death. His only child, the prince imperial, who had joined the British army in South Africa as a volunteer, was killed by the Zulus, June 2, 1879.

Napoleon, a card game played by two or more players, each of whom receives five cards. It is usually played for money, a fixed stake per trick being agreed on. When the player at the left of the dealer examines his cards he either declares to win one, two, three, four, or five tricks—the latter called 'going nap'; or he 'passes,' *i.e.*, declines to play, being accordingly out of that game. If he declares any number of tricks less than five, the next player in order has an opportunity of declaring or passing, the one who declares the highest number of tricks being always the one who has to play. The first card played determines that trumps are to be of that suit for the game. Should the player declaring succeed in winning his number of tricks he receives a corresponding sum from each player, and the game recommences; should he fail, he has to pay to each player a sum corresponding to the number of tricks.

Napoléon-Vendée. See *Roche-sur-Yon.*

Napoli de Romania, or NAUPLIA (nä'pli-a), a seaport town of Greece, 28 miles S. S. W. of Corinth. The Bay of Nauplia has excellent anchorage, and there is a good harbor for small vessels. Pop. 5955.

Napu (nä'pä), a very small, peculiarly elegant musk-deer (*Tragŭlus napu*) inhabiting Java and Sumatra.

Narbada. See *Nerbudda.*

Narbonne (när-bon; Latin, *Narbo Martius*), a town of Southern France, department of Aude, situated in a wine-growing plain, 5 miles from the Mediterranean. It has dark, winding streets, a fine church (the choir only completed), a Gothic structure founded in 1272; and a castellated town-hall, formerly an archbishop's palace. The manufactures are not important. The honey of Narbonne is celebrated. Narbonne was the first colony which the

Romans founded beyond the Alps. It became the capital of Gallia Narbonensis, but is very poor in Roman remains. Pop. 23,289.

Narcissus (nār-sis'us), according to Greek mythology the son of the river-god Cephissus. The young Narcissus was of surpassing beauty, but excessively vain and inaccessible to the feeling of love. Echo pined away to a mere voice because her love for him found no return. Nemesis determined to punish him for his coldness of heart, and caused him to drink at a certain fountain, wherein he saw his own image, and was seized with a passion for himself of which he pined away. The gods transformed him into the flower which bears his name.

Narcissus, an extensive genus of bulbous plants, mostly natives of Europe, nat. order Amaryllidaceæ. The species are numerous, and from their hardiness, delicate shape, gay yellow or white flowers, and smell, have long been favorite objects of cultivation, especially the daffodil (*N. Pseudonarcissus*), the jonquil (*N. Jonquilla*), polyanthus narcissus (*N. Tazetta*), and white narcissus (*N. poeticus*). Some of the more hardy species grow wild in our woods and under our hedges.

Narcotic (nâr-kot'ik), derived from a Greek term signifying numbness or torpor, is the name given to a large class of substances which, in small doses, diminish the action of the nerves. Most narcotics are stimulating when given in moderate doses; in larger doses they produce sleep; and in poisonous doses they bring on stupor, coma, convulsions, and even death. Opium, hemlock, henbane, belladonna, aconite, camphor, digitalis, tobacco, alcohol, leopard's-bane, and a variety of other substances, are narcotics.

Narcotine (nâr'kō-tin), an alkaloid contained in opium to the amount of 6 or 8 per cent. It is poisonous in large doses, about 45 grains being sufficient to kill a cat.

Nard. See *Spikenard.*

Nardo (när'dō), a town of S. Italy, province Lecce. It has manufactures of textiles. Pop. 11,653.

Nardoo (nâr-dö'; *Marsilia macrŏpus*), a clover-like acotyldenous plant of Australia, occupying extensive tracts of inundated land. Its dried spore-cases are eaten by the natives.

Nares (nārz), Sir George Strong, Arctic explorer, born in England in 1831. He entered the navy and took part in the Arctic expedition of 1852-54. He served in the Crimean war, and from 1872 to 1874 he commanded the *Challenger* during her celebrated scientific expedition, and in 1875 was first in command of a new North Polar expedition. He afterwards was engaged in a survey of the South Pacific, and was made a vice-admiral in 1892. He is the author of *Seamanship, Reports on Ocean Soundings, Voyage to the Polar Sea,* etc.

Narghile, or Nargileh (nâr'gē-lā), a kind of Eastern tobacco pipe, the chief feature of which is that when used the smoke is made to pass through water.

Naro (nä'rō), a town of Sicily, province Girgenti. It has a trade in oil, wine and sulphur. Pop. 12,866.

Narragansett Bay (nâr-a-gan'set), a bay of the United States, running into Rhode Island for 28 miles. The city of Newport, near its entrance, Providence near its head, and Narragansett Pier, are well-known places of resort on its shores.

Narragansetts, a tribe of Indians which in the early history of New England occupied the part of Rhode Island w. of Narragansett Bay. They were nearly all destroyed during the King Philip's war.

Narrow Gauge, a railroad track of less width than the usual or standard gauge, of 56½ inches between the rails. The narrow gauge has been used in some places for economical reasons, especially where it was difficult and costly to gain a full width of roadbed, but the advantage of uniformity is so great that in the United States the standard gauge is now almost everywhere used.

Narses (n a r ' s ē s), the companion-in-arms of Belisarius, and one of the most successful generals of the Emperor Justinian, was an Asiatic slave and eunuch whom the latter had taken into favor and appointed to a command in 538 A.D. Between that period and 552 he put an end to the dominion of the Goths in Italy, and in 553 was himself appointed exarch, and fixed his court at Ravenna. He was deposed under the Emperor Justinus II, 565, and died at Rome 568.

Narsinghpur (när-sing'pör), c h i e f town of district of the same name, Central Provinces of India. It is an important center for the grain and cotton trade of the Nerbudda Valley. Pop. 11,233. The district has an area of 1976 square miles, and pop. 315,518.

Narthex. See *Asafetida.*

Narva (när'va), a town of Russia, in the government of St. Petersburg and 79 miles southwest of that city,

on the Narova. Narva is celebrated for the great victory gained by Charles XII in its vicinity over the Russians in 1700. The latter retook the place by storm in 1704. Pop. 16,577.

Narvaez (när-vä'eth), Ramon Maria, Duke of Valencia, a Spanish statesman and general, born in 1800; died in 1868. Early in life he entered the Spanish army, and he rapidly acquired distinction. When Gomez, the Carlist general, was engaged in his adventurous march through Spain, in 1836, Narvaez, who then commanded a division under Espartero, was directed to pursue him, and totally routed him near Arcos. He then devoted himself to politics, and became the rival of Espartero himself. Having taken part in an unsuccessful rising of the progressista party in 1838, he fled to France and remained there five years. In 1843 he hastened to Spain, put himself at the head of an insurrection, and entered Madrid victorious (July, 1843). In the following year he formed his first ministry, and received from Queen Isabella the rank of marshal and the title of Duke of Valencia. His government was overthrown in 1846, but he was soon recalled, and during the remainder of his life was several times entrusted with the formation of a cabinet.

Narwhal (när'hwal; *Monŏdon monocĕros*), a cetaceous mammal found in the northern seas, averaging from 12 to 20 feet in length. The body color is whitish or gray spotted with darker patches. There is no dorsal fin. The dentition of the narwhals differs from that of all other members of the dolphin family. In the female both jaws are toothless, but the male narwhal has two canines in the upper jaw, which are sometimes developed into enormous projecting tusks, though commonly only the one on the left side is so developed, being straight, spiral, tapering to a point, and in length from 6 to 10 feet. It makes excellent ivory. From the frequency with which the narwhal appears as having a single horn it has obtained the name of the *Sea-unicorn*, *Unicorn-fish*, or *Unicorn Whale*. The food of the narwhal appears to consist chiefly of mollusca, and notwithstanding its formidable armature it is said to be inoffensive and peaceable. The Greenlanders obtain oil from its blubber, and manufacture its skin into useful articles.

Narwhal.

Naseberry (nāz'ber-i), the fruit of *Sapōta Achras*, one of the finest West India fruits. See *Sapota*.

Naseby (nāz'bi), a village in Northamptonshire, England, 12 miles from Northampton. In 1645 Fairfax and Cromwell entirely defeated Charles I in the vicinity.

Nash, John, an English architect, born in London in 1752; died in 1835. In 1815 he was made surveyor to the crown estates. He laid out Regent Park, formed Regent Street, and built the United Service Club, Haymarket Theater and Buckingham Palace, London, as also the Pavilion at Brighton.

Nash, Richard, known as *Beau Nash*, born at Swansea in 1674; died in 1761. He was master of the ceremonies at Bath, and for many years was sole arbiter of fashion. He died in comparative indigence.

Nash, Thomas, an English satirist and dramatist, born at Lowestoft, Suffolk, in 1558; died in 1600 or 1601. He was graduated at Cambridge in 1584, but was afterwards expelled for satirizing the authorities. After spending several years on the Continent he returned to London in 1589, and took an active part in the Martin Marprelate controversy, writing several pamphlets on the prelatical side. In conjunction with Marlowe he wrote a drama, *Dido, Queen of Carthage*, and in 1592 produced a comedy of his own, *Summer's Last Will and Testament*, which was acted before Queen Elizabeth.

Nashua (nash'ü-a), a city of New Hampshire, one of the capitals of Hillsboro Co., 35 miles south of Concord, at the junction of Merrimac and Nashua Rivers. It has several extensive cotton manufactories, also iron works, and manufactures of steam engines, locks, guns, tools, shuttles, carpets, etc. Pop. 26,005.

Nashville (nash'vil), capital of the State of Tennessee, and of Davidson Co., on the left bank of the Cumberland, on rocky bluffs rising above the river. The State capitol on Capitol Hill is a fine building. The town has no fewer than four universities: Nashville University, with a specially important medical school; Vanderbilt University; Fish University for colored students; and Roger Williams (Baptist) University. It is the seat of the Tennessee Historical Society. Nashville is a great commercial center, having a large trade in cotton and tobacco. It is the leading hardwood and the fourth general lumber market in the United States. Its manufacturing interests are large and important, including very extensive lumber-producing industries and very large boot and shoe factories. There are also large flour, cotton and woolen mills, and numerous smaller industries. The production of phosphates is important. Pop. 110,364.

Nasik (nä'sik), a district in Bombay, British India; area, 5850 square miles. Pop. 816,504. The chief town is Nasik, which ranks among the most sacred places of Hindu pilgrimage, and is a place of considerable industrial importance. Pop. 21,490.

Nasirabad (n a - s ē r - ä - bäd'), an Indian cantonment in Rajputana, 15 miles S. E. from Ajmere. It is garrisoned by troops of the Bombay army. Pop. 22,494. Also the name of a town in the Nasirabad subdivision of Khandesh District, Bombay Presidency. Pop. 14,668.

Nasmyth (nā'smith), ALEXANDER, a landscape painter, born at Edinburgh in 1758; died in 1840. He went early to London, and studied under Allan Ramsay, painter to George III. He afterwards proceeded to Rome, and on his return to Edinburgh he commenced portrait painting, but soon abandoned it for landscape. His style is remarkable for its simplicity and beauty.—PATRICK, or PETER, son of the former, born at Edinburgh in 1786; died in 1831, was also a painter. Owing to an injury to his right hand he learned to paint with his left. In London, where he became very popular as a painter of English landscape, he was designated the English H o b b e m a.—JAMES, another son, born in Edinburgh in 1808, was educated at the School of Arts, Edinburgh, and in engineering under Maudsley in London. He removed in 1834 to Manchester, where he became a successful machine constructor and inventor. The steam hammer, which has rendered possible the immense forgings now employed, was invented by him in 1839. The steam pile driver and the safety foundry ladle are among his other inventions. He also acquired fame as a practical astronomer.

Nasr-ed-Deen (n ä s r'ed-dēn), Shah of P e r s i a, born in 1829; succeeded to the throne in 1848. In 1856 his occupation of Herat involved him in war with Britain. Subsequently the two countries were friendly, and he made three journeys to Western Europe in 1873, 1878 and 1889. He was assassinated in 1896, and succeeded by his son, Muz-affer-ed-Deen.

Nassau (nas'sa), formerly a state of Germany, now part of the Prussian province of Hesse-Nassau, seized by Prussia in 1866.

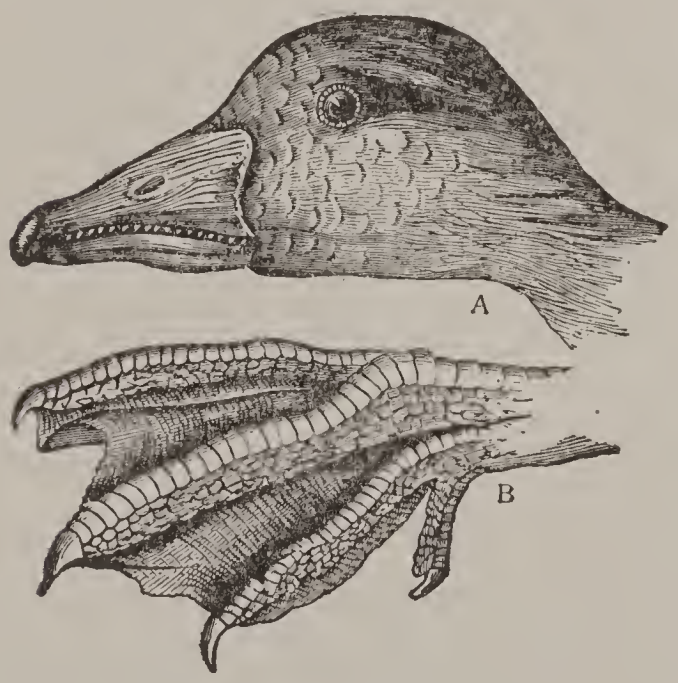
Nassau, capital of the Bahamas, island of New Providence, a handsome city, and a winter health resort for Americans and West Indians. Pop. about 10,000.

Nast, THOMAS, caricaturist, was born in Bavaria in 1840; was brought to the United States in 1846. After service in England and Italy he began drawing war sketches for *H a r p e r ' s Weekly* in 1862. In his particular line, pictorial satire, Nast stands in the foremost rank. He died in 1902.

Nasturtium (nas-tur'shi-um), or Indian cress, an American climbing annual with pungent fruits and showy orange flowers.

Natal (na-täl'), a British colony on the southeast coast of Africa, adjoining Cape Colony on the S. W. and the Orange River and Transvaal colonies on the N. W. and with a seaboard of 180 miles on the Indian Ocean. Its area is 34,600 square miles. The only spot where sheltered anchorage can be obtained is at Port Natal, a fine circular bay near the center of the coast. (See *Durban.*) The surface is finely diversified, rising by successive terraces from the shore towards the lofty mountains on its western frontiers. The chief summits are Champagne Castle, 10,357 feet; Mont aux Sources, about 10,000 feet; and Giant's Castle, 9657. The mineral productions are principally coal, ironstone, limestone and marble. Gold has also been found in various localities. The colony is well watered, but none of its rivers are navigable. The climate on the whole is extremely salubrious, and by no means trying to European constitutions. There are large forests on the western and northern frontiers. The soil is generally rich and strong. On the higher forest and table land cattle thrive well; and in the interior wheat, barley, oats, maize, beans and vegetables of almost every de-

scription have been largely and successfully grown. In many parts the vine and fruit trees thrive, and in the coast region generally cotton, tobacco, indigo, sugar-cane and coffee grow well. Tea planting has been recently introduced. The chief exports are coal, gold, wool, sugar, hides and bark. In the less-frequented parts of the interior elephants and lions are still occasionally seen; the leopard is not uncommon, and hyenas, tiger-cats, antelopes, jackals, ant-bears and porcupines are numerous. The hippopotamus has still his haunts in several of the rivers, and there are numbers of small crocodiles. The birds comprise the vulture, several varieties of eagle, the secretary-bird, wild turkey, etc.—Natal was discovered on Christmas Day, 1497, by Vasco da Gama, a Portuguese, and named by him 'Terra Natalis.' The first settlers were the Dutch Boers, who left Cape Colony in 1836, and in 1839 removed to Port Natal and proclaimed themselves an independent republic. The establishment of a hostile settlement at the only port between Algoa and Delagoa Bays was incompatible with British interests, and in 1845 Natal, after a formidable resistance by the Boers, was proclaimed a British possession. In 1856 it was separated from Cape Colony and made a separate colony. Natal was invaded by the Boers



Natatores.
A. Head of Grey Lag Goose.
B. Foot of Domestic Goose.

in 1881 and again in 1899. Capital, Pietermaritsburg. Pop. estimated at 1,206,386, of whom four-fifths are natives.

Natatores (nā-ta-tōr'ēz), the order of swimming birds characterized by a boat-shaped body, usually by a long neck, short legs placed behind the center of gravity so as to act as paddles, toes webbed or united by a membrane to a greater or less extent, close oily plumage to protect them from sudden reductions of temperature from the water, in which they mostly live and obtain their food. The young are able to swim and procure food for themselves the moment they are liberated from the shell. The Natatores include the ducks, geese, swans, flamingoes, the penguins, auks, divers, grebes, gulls, pelicans, cormorants, gannets, frigate-birds, darters, and others.

Natchez (nach'ez), a city of Mississippi, capital of Adams Co., on the Mississippi River, 279 miles above New Orleans. It is built on a bluff 150 feet above the water, and on the narrow strip of land between the foot of the hill and the river. Natchez is a great cotton mart, and has an increasing trade. Its industries embrace cotton and oil mills, cotton presses and gins, brick and ice factories, etc. Pop. 11,791.

Natchez, a tribe of Indians formerly residing in the west of the present State of Mississippi, near the Mississippi River. Encroached upon and badly treated by the French who had settled that region, they rose in 1729 and killed all the Frenchmen within their territory. As a result they were attacked and nearly all destroyed, the few who survived being taken and sold as slaves. The Natchez differed from all the other Indians of this country in their political organization, which was that of an aristocracy and class of nobility. Their ruler, known as the Sun, and supposed to be descended from the solar deity, had absolute power of life and death over his subjects. They had temples on high elevations and an intricate system of religion and organization, surpassing that of any other tribe north of Mexico

Natica (nat'i-ka), a genus of gasteropodous molluscs, type of the family Naticidæ.

Natick (nā'tik), a town of Middlesex Co., 17 miles w. s. w. of Boston. It has extensive boot and shoe manufactures, also baseballs, woodenware, clothing, etc. Pop. 9866.

Nation (nā'shun; Latin, *natio*, from *natus*, born), either a people inhabiting a certain extent of territory and united by common political institutions, or an aggregation of persons of the same ethnological family and speaking the same or a cognate language. In some universities, as in those of Glasgow and Aberdeen, for instance, the students are divided into 'nations' to distinguish those from different districts or

countries. This custom originated in the University of Paris antecedent to the institution of faculties.

National Airs (n a s h ′ u n -al), any class of airs peculiarly identified with the music of some particular people, and especially a tune which by national selection or consent is adapted to words which represent or reflect a sentiment, taste, or habit of a nation, and which is usually sung or played on certain public occasions. Examples are: *The Star Spangled Banner*, in the United States; *God Save the King*, in Britain, and the *Marseillaise*, in France.

National Assembly, the legislative b o d y formed in France in 1789, developed from the States General. It was the legislature that inaugurated the French Revolution.

National Bank. See *Bank.*

National Cemeteries. In the second year of the Civil war (1862) the President of the United States was authorized by Congress to purchase national cemetery grounds for soldiers who had died in the defense of the nation. There are 83 of these cemeteries, containing the bodies of 330,700 men—soldiers and sailors. Each grave is marked by a stone tablet. Liberal appropriations are made by Congress from year to year for the proper maintenance of the cemeteries.

National Debt, the sum which is owing by a government to individuals who have advanced money to the government for public purposes, either in the anticipation of the produce of particular branches of the revenue, or on credit of the general power which the government possesses of levying the sums necessary to pay interest for the money borrowed or to repay the principal. Of national debts that of France is the highest, reaching the enormous total of over $5,600,000,000, Russia, with about $4,000,000,000, and Great Britain, with $3,800,000,000, come next. That of the United States is about $1,300,000,000.

National Forest Reserves. Within the decade following 1900 remarkable progress was made by the United States government in setting aside the forest-clad portions of the public lands for the benefit of the people as a whole, definitely withdrawing them from individual occupation. Of the estimated 600,000,000 acres of forest within the country about one-third, or 190,608,243 acres, had thus been set aside by the beginning of 1912. This included 163,777,218 acres within the States, 26,761,626 acres in Alaska, and 65,950 acres in Porto Rico. Of those within the States, the most easterly were in Arkansas, where about 20,000,000 acres were withdrawn in December, 1907, and July, 1908. The idea of conservation has been rigidly applied to this vast forest area, a large number of forest wardens being employed and careful supervision exercised to prevent or limit fires or any wasteful usage. Yet the national forests are put to useful service. Thus, their forage crop supports cattle, horses, sheep and goats worth $10,000,000 annually to Western stockmen. The annual timber crop which they are capable of producing is estimated as worth, on the stump, perhaps $10,000,000 more, and probably ten times as much when prepared for market, and this is continual, since the new growth will be made to replace, perhaps to exceed, the cutting of marketable timber.

National Guard, in F r a n c e, an armed organization of the inhabitants of towns or districts for local defense, differing mainly from the militia and volunteers of Britain in that it was at the disposal of the respective municipalities rather than of the crown. After the suppression of the communal revolt in Paris (1871) the National Assembly decreed the dissolution of the National Guard. In the United States the militia of the several States are known as National Guards.

Nationalists, the term applied to the Irish political p a r t y whose program includes the more or less complete separation of Ireland from Great Britain. See *Home Rule.*

National Institute of Arts and Letters was established in 1898. Qualification for membership, which is limited to 250, is 'notable achievement in art, music or literature.' From this body was organized in 1904 the American Academy of Arts and Letters (membership 50), whose object is 'to represent and further the interests of the fine arts and literature.'

National Parks and Reservations, portions of the public lands of the United States having remarkable natural features, which has led to their being reserved from settlement and set aside for the enjoyment of the general community. The greatest in extent of these is the Yellowstone National Park, in the States of Wyoming and Montana. It embraces about 3348 sq. miles and contains extraordinary natural wonders. A second is the Yosemite Na-

tional Park, in California, of about 1512 sq. miles, remarkable for grandeur and beauty. Sequoia Park, in Tulare Co., and General Grant Park, in Mariposa Co., California, contain the finest specimens of the famous 'big trees' of that State. The Casa Grande Ruin, near Florence, Arizona, is one of the most noteworthy relics of the prehistoric dwellers of the Southwestern United States. Another park takes in the territory of the petrified trees of Arizona, a remarkable example of organic transformation. In addition may be named the Mt. Ranier National Park in Washington, the Crater Lake National Park in Oregon, and the Glacier National Park in Montana. Canada has followed this example in its attractive Banff National Park. The United States government has also reserved certain localities on account of their historic interest, including the Gettysburg, Chickamauga, and some other battlefields. See *Yosemite* and *Yellowstone.*

Natron (nā'trun; $Na_2 CO_3$ 10 $H_2 O$), native carbonate of soda or mineral alkali, found in the ashes of several marine plants, in lakes in Egypt, and in some mineral springs.

Natron Lakes, several lakes or pools rich in natron in the vicinity of Zakook, a village about 60 miles W. N. W. of Cairo.

Natterjack (nat'er-jak), NATTERJACK TOAD, the *Bufo calamīta,* a species of toad found in various parts of Western Europe, in certain parts of Asia (including Tibet), and not uncommon in England. The general color is lightish-brown, spotted with patches of a darker hue. A line or streak of yellowish tint passes down the middle line of the back. It does not leap or crawl like the common toad, but rather runs, whence it has the name of walking or running toad. It has a deep and hollow voice, audible at a great distance. It is often found in dry situations.

Nattor (nat-tōr'), a town of India, in Bengal, on the Nadar River, an offshoot of the Ganges. Pop. about 10,000.

Natural Bridge (nat'ū-ral) in Rockbridge Co., Virginia, spans a deep chasm, through which a small stream flows, and is formed by an immense limestone stratum fashioned into an arch 215 feet high, length 93 feet, width 80 feet.

Natural Gas, a gas found issuing naturally from crevices in the earth's surface in various localities. It burns like ordinary coal gas, and consists of a mixture of various hydro-carbons, the chief ingredient being marsh-gas (fire-damp). It has long been known and utilized to some extent as an illuminant, but only in recent years has it attained much importance, large deposits having been found in the United States, used both for lighting purposes and as a fuel. It is most abundant in the petroleum regions, but the supply is fast diminishing.

Natural History, in its earlier sense, that department of knowledge which comprehends the sciences of zoölogy and botany, chemistry, natural philosophy or physics, geology, palæontology, and mineralogy. In more recent times it was restricted to geology, palæontology and mineralogy. may be held to embrace the field of knowledge which deals with the earth's crust and its productions.

Naturalization (nat-ū-ral-i-zā'-shun). The laws of the United States provide that to become naturalized an alien must declare on oath before a circuit or district court, or a district or supreme court, or a court of record of any of the States having a seal and a clerk, two years at least prior to his admission, that it is his *bona fide* intention to become a citizen of the United States, and to renounce forever all allegiance and fidelity to any foreign prince, state or sovereignty of which the alien may be at the time a citizen or subject. His full admission to citizenship cannot take effect until he has resided in this country for the continued time of five years preceding his admission, and one year, at least, in the State or Territory in which he makes application. See *Alien.*

Natural Philosophy, originally the study of nature in general; but now commonly restricted to the various sciences classed under *Physics.*

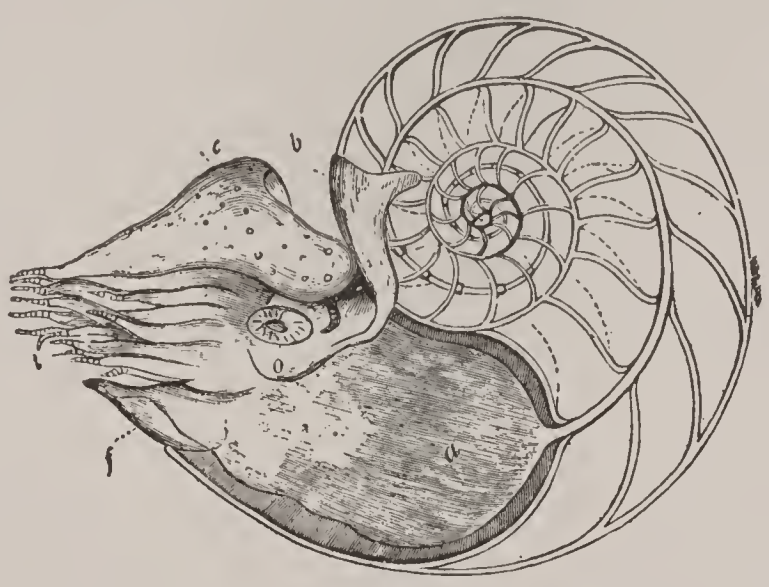
Natural Resources, CONSERVATION OF, a system of protecting and preserving the forests, mines, fisheries, waters and other natural resources of the United States, decided upon by a convention of State governors, held in Washington, D. C., in 1908. These forests were being rapidly depleted by wasteful usage, and a Conservation League was formed to adopt suitable measures for their future preservation.

Natural Selection, a phrase frequently employed in connection with Darwin's theory of the origin of species, to indicate the process in nature by which plants and animals best fitted for the conditions in which they are placed survive, propagate, and spread, while the less fitted die out

and disappear; this process being combined with the preservation by their descendants of useful variations arising in animals or plants. Mr. Darwin's theory takes origin from the fact that all species *vary* to a greater or less extent.

Natural Theology, is that department of ethics which deals with those propositions relating to the existence and attributes of God and the duty of man which can be demonstrated by human reason, independent of written revelation.

Nature Printing, is the art of giving an exact reproduction of natural objects by printing from impressions of the objects themselves formed by pressure on metallic plates. The only objects to which the art can be applied with success are those with tolerably flat surfaces, such as dried and pressed plants, especially ferns and seaweeds, embroidery and lace, the grain of wood, etc.



Pearly Nautilus. (*Nautilus pompilius.*)
a, Mantle. *b*, Its dorsal fold. *c*, Hood. *o*, Eye. *t*, Tentaeles. *f*, Funnel.

Naugatuck (nạ′ga-tuk), a borough of New Haven county, Connecticut, on a river of same name, 27 miles N. by E. from Bridgeport by Naugatuck Railroad. It has large rubber works and manufactures of underwear, machinery, brass, iron, paper boxes, buttons, cutlery, etc. Pop. 12,722.

Naukratis (nạ′kri-tis), an ancient Greek city in Egypt, which stood on a navigable canal in the western part of the Delta near the Canopic branch of the Nile. It existed as early as the beginning of the seventh century B.C., and had been a place of great splendor. Recent excavations on the site of the city have been productive of highly valuable results.

Naumachia (nạ′mā′ki-a; from the Greek *naus*, a ship, and *machē*, a fight), among the Romans a public spectacle representing a mock sea-fight. The same term also signified the edifices in which these combats took place.

Naumburg (noum′burh), a town of Prussian Saxony, 18 miles S. S. W. of Merseburg, in the valley of the Saale. One of the principal buildings is the cathedral, partly Gothic and partly Romanesque, completed in 1249. The manufactures consist of combs, playing cards, leather, hosiery, etc. Pop. (1905) 25,137.

Naupactus. See *Lepanto.*

Nauplia. See *Napoli di Romania.*

Nauplius (nạ′pli-us), a term applied to the earliest stage in the development of the lower Crustacea. The naupliiform larva has an ovate unsegmented body, a median eye, and three pairs of limbs. This form is regarded as the primitive form of all crustaceans.

Nausea (nä′sha), the sensation of sickness, or inclination to vomit, similar to that produced by the motion of a ship at sea. Though the feeling is referred to the stomach, it frequently originates in disorder of other and remote parts of the body, such as the brain, kidneys, womb, etc.

Nautical Almanac. See *Almanac, Nautical.*

Nautilus (nạ′ti-lus), a genus of cephalopods with polythalamous or many-chambered shells. The shell of the pearly nautilus (*N. pompilius*) is a spiral with smooth sides. The turns or whorls are contiguous, the outer whorl covering the inner. The chambers of the shell are separated by transverse septa, and one after the other have been the residence of the animal, being successively abandoned as it has grown. The animal thus always resides in the cavity of its outermost or external chamber. A siphuncle connects the body with the air-chambers, passing through each transverse septum till it terminates in the smallest chamber at the inner extremity of the shell. These internal chambers contain only air. By means of

Nautilus shown in section.

the siphuncle the animal is enabled to sink or swim at will. The nautilus is an inhabitant of the tropical seas. Only three or four existing species are known, though the fossil species exceed a hundred. The name is often loosely applied to the shells of different genera of mollusca. The animal which has been poetically said to sail in its shell upon the surface of the water is the paper-nautilus or argonaut. The shell in question, somewhat resembling a sail, is its egg case. See *Argonaut.*

Nautilus Propeller, a hydraulic device for propelling ships. Water is admitted into a watertight compartment in the bottom of the vessel, in which is a horizontal turbine wheel rotated by a vertical shaft from the engine. The rotation of the wheel impels the water through two pipes outwardly to each side of the ship, where it escapes through two nozzles that may be directed either toward the bow or stern of the vessel, causing her either to go ahead or back, as the case may be.

Nauvoo (nạ-vō′), a city of Hancock County, Illinois, founded in 1840 by the Mormons, and afterwards occupied for a time by a company of French socialists. The culture of grapes is the chief industry. Nauvoo is the seat of St. Mary's Academy and Spaulding Institute. Pop. 1020.

Navajo Indians (nä′vä-hō), a tribe of southwestern American Indians of formerly roving and warlike habits, many of whom are now engaged in civilized pursuits. They occupy a reservation in the N. W. of New Mexico and the N. E. of Arizona.

Naval Academy, UNITED STATES. This school for the navy was founded at Annapolis, Maryland, in 1845. The students have a six years' course of study, four years at the Academy and two years at sea, at the end of which time the examination for graduation takes place, the graduates being appointed to fill vacancies in the lower grade of the line of the Navy. During their academic career they are known as midshipmen and receive the pay of $600 per annum. Two are allowed for each member of Congress, two for the District of Columbia, five each year from the United States at large, and one from Porto Rico, who must be a native of that island. Candidates must be between the ages of 16 and 20 years, must be unmarried, and if married before graduation will be dismissed. They must be physically sound, well formed, and of robust constitution, limits of height and weight being also prescribed.

Naval Hospitals. See *Hospital.*

Naval Reserve (ROYAL), a British force originating in 1859, and recruited from the merchant service, fishing centers, etc., the members being classed able seamen, ordinary seamen, and boys. They number about 20,000. The enrolment is for five years, and four enrolments qualify for a pension.

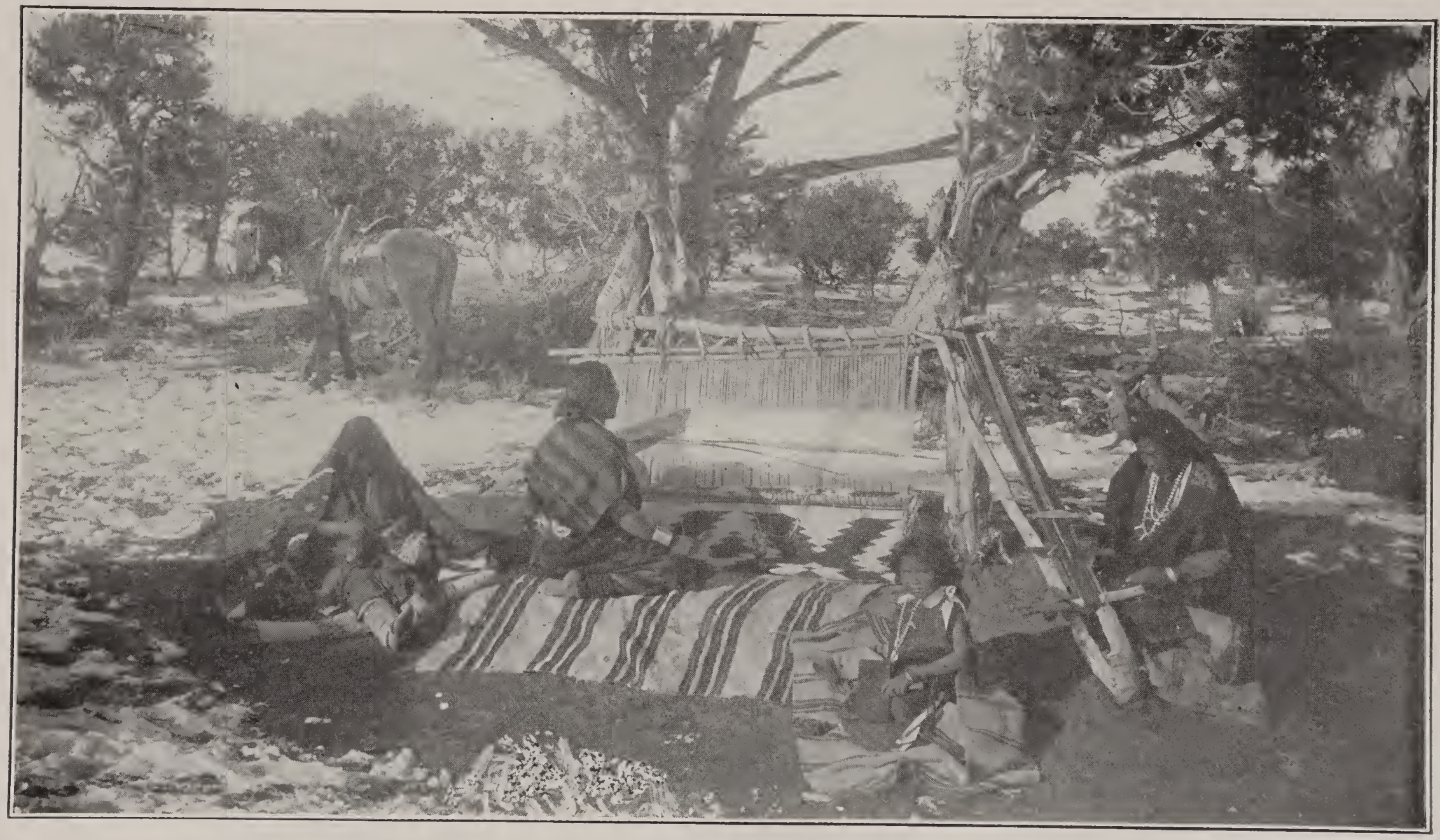
Naval Stores, the term applied to such materials as resin, tar, pitch and turpentine, derived from the pine tree and used in ship construction. A prolific source of these has been the pine forests of the Southern Atlantic States, successively North and South Carolina, Georgia, and at present Florida.

Navarino (nạ-va-rē′no), a seaport of Greece, on the southwest coast of the Morea, near the site of the ancient Pylos, the scene of the defeat of the Turco-Egyptian fleet under Ibrahim Pasha by the allied fleets of Britain, France and Russia, under Sir E. Codrington, October 20, 1827.

Navarre (nȧ-värʹ; Spanish, *Navarra*), a former kingdom, now a province of Spain, between Aragon, Old Castile, and Biscay; area, 4045 square miles; pop. 307,669. Its northern boundary is very mountainous, being composed of the western slopes of the Pyrenees, which by their numerous streams supply the Ebro and Bidassoa, its principal rivers. Extensive forests clothe the mountain slopes, but the lowlands produce wheat, maize, wines, oil, flax, hemp, and all sorts of leguminous plants, as well as abundant pastures for cattle of every description. Iron, copper, lead, etc., are among the minerals. The capital is Pamplona. The ancient Kingdom of Navarre comprised both the modern Spanish province, sometimes called Upper Navarre, and also French or Lower Navarre, separated from the former by the Pyrenees, and now comprised in the departments of Basses Pyrénées and Landes. Ferdinand the Catholic annexed Upper Navarre to Castile in 1512, while the north portion ultimately passed, with Henry IV, to the crown of France.

Nave (nāv), in Gothic architecture, that part of a church extending from the western entrance to the transept, or to the choir and chancel, according to the nature and extent of the edifice.

Navel (nāʹvl), or UMBILI′CUS, the aperture or passage in the abdomen which in the adult is normally closed, but in the fœtus or embryo gives passage to the umbilical vessels, by means of which the fœtus communicates with the parent through the placenta. The cicatrization or healing of the navel produces the contracted and depressed appearance



By permission of American Bureau of Ethnology.

NAVAJO BLANKET WEAVING

One of the chief sources of income of the Navajo Indians is blanket weaving. The wool used is from their own sheep and the colors and designs have made the work famous.

so familiar in the external aspect of the structure.

Navigation (nav-i-gā′shun), the science or art of conducting ships or vessels from one place to another. The management of the sails, rudder, etc., or the working of the ship generally, though essential to the practice of navigation, belongs rather to seamanship, navigation being more especially the art of directing and measuring the course of ships, the method of determining their position, etc., by the laws of geometry, or by astronomical principles and observations. In order to the accomplishment of this the ship must be provided with accurate charts of seas, plans of ports and harbors, etc., compasses, chronometer, sextant, log and log-line, various mathematical instruments, leads and lead-lines, log-book, etc. It is by the compass that the direction in which the ship sails, or should sail, is determined. Though it points in a northerly direction, it does not generally point to the true north, but has a certain variation which must be taken into account. The rate of speed at which a vessel is sailing is found by means of the log, which is heaved usually at the end of every hour. By noting the rate of sailing, the direction of the course, and the time occupied, the ship's position may be estimated, allowance being made for deviation caused by currents, and by the wind driving the vessel to leeward. The position thus determined is said to be found by dead-reckoning. It is not safe to trust to dead-reckoning for any length of time, and a more accurate method of finding the vessel's position at any time is required. This consists in taking observations of the heavenly bodies with the sextant, and these being compared with data given in the Nautical Almanac, while correct Greenwich time is given by the chronometer, the latitude and longitude, or true position, is easily found. In navigating a ship a certain knowledge of trigonometry is required, but the operations can be much shortened by tables and instruments. In directing a ship's course, and applying it on a chart, several methods of what are called *sailings* are employed, as plane sailing (the earth being regarded as having a plane surface), Mercator's sailing, great circle sailing (sailing on a great circle of the sphere), etc.

Navigation, Laws Regarding. After the establishment of the independence of the United States it was natural that a spirit of retaliation should prevail in the framing of the navigation laws. Laws passed in 1790 and 1792 discriminated to such an extent in favor of American shipping as to give a monopoly of the foreign carrying trade. In 1815 a treaty was negotiated between the United States and Great Britain by which the ships of the two countries were placed reciprocally upon the same footing in the ports of the United States and Great Britain. The shipping act of 1884 placed the sailing fleet of the United States on an equality with the vessels of other flags as regards the expenses of navigation. Consular fees are abolished, and consuls are paid by the government. The further payment of advance wages to seamen was prohibited. The 'limited liability act' provides that the individual liability of a ship owner, for the ship's debts, except for wages due to persons employed by the owners, shall be limited to the proportion of his interest.

Navy (nā′vi), a collective term for all the ships, or all of a certain class belonging to a country. Thus we may speak of the mercantile navy of a country; but the term by itself means the whole of the ships of war belonging to a nation; or the whole naval establishment of any country, including ships, officers, men, stores, etc. The organization of a national naval force in England is assigned to Alfred the Great; but it was not till the time of Henry VIII that a regular shape was given to the Royal Navy as a standing force. In his reign an admiralty office was established and public dockyards opened at Woolwich, Deptford and Portsmouth. In the reign of Elizabeth the naval power of England was increased by charters and money grants given to merchant adventurers, trading companies and privateers. Classing ships by rates or ranks based on their relative fighting power appears to have become well established during the Commonwealth, when the navy attained great importance; and a similar classification prevailed up to the middle of the present century. When George I came to the throne the navy consisted of 178 ships, ranging from about 374 tons burden to one of 1869 tons, carrying 100 guns. Two leading qualities now stood forth as the most important object to be attained in the construction and equipment of vessels for war—strength of offensive armament, and speed and facility of manœuvring. These qualities gained in relative importance at the expense of a previously preponderating element of equipment, namely, the number of fighting men available for assault at close quarters. Two classes of vessels, according to the preponderance of one or other of these qualities, thus came to constitute at this time the chief strength of fleets. The ship of the line, or first class war vessel, carried the

strength of offensive equipment to the utmost limit practicable without sacrificing sea-going qualities. The frigate, excelled in strength only by a line-of-battle ship, was built and rigged with every artistic appliance to secure speed. The great point in a first class vessel was the weight of broadside, and a hundred or more guns on three decks were commonly carried. In a pitched battle it was the line-of-battle ships that bore the brunt of the fight and decided the day. The frigates scoured the seas on special missions, escaped from the enemy's line-of-battle ships by speed, destroyed his privateers, and protected the commerce of their own country. During all the great European wars these were the leading types of vessels employed. In the early part of the nineteenth century Britain had usually over 100 ships of the line and about 150 frigates in commission, besides an equal number of sloops and other vessels, measuring 800,000 to 900,000 tons in all. Between 1841 and 1859 steam was gradually substituted for sailing vessels in the navy; and since then a great number of armor-plated ships, armed with guns of enormous caliber, have been substituted for timber vessels. See *Iron-clad Vessels.*

While the United States had few ships of war in the Revolutionary struggle, it won a share of success by the ability of some of its captains, notably John Paul Jones. In the War of 1812-15, however, its ships surpassed those of Great Britain in speed and fighting powers, and many notable victories were gained. The Civil war was of importance in showing the great superiority of iron-clad to wooden vessels, and though slower than the naval powers of Europe in developing a navy of this type, it was fairly well equipped when the next war broke out.

In the war with Spain the fighting power of American ships and the skill at their guns of American seamen received their first test after the Civil war, and though the nation they fought against was much their inferior in naval strength, it had some good ships, but these were disposed of with a speed and completeness that filled the nations of Europe with surprise. It was not to the weight of ships and metal so much as to the able gunnery of the Americans that the striking result was due, and the useful lesson was taught that the ability to shoot straight was of equal importance in war with the power of building strong ships and making great guns. This war gave the United States an impetus in naval construction which has been carried on so rapidly that this country now ranks next to Great Britain in naval strength. It has surpassed France, which, until recently, stood second in rank, and its chief rival now is Germany, which country is increasing its naval power with strenuous haste; so much so, indeed, as to cause alarm in Great Britain, whose two-power supremacy is seriously threatened. The American fleet in the year 1912 embraced 30 battleships, with seven others awaiting construction. These, with the exception of the Kearsarge, are named after the states of the Union, and the same system has been adopted with the armored cruisers, of which there are now 12 upon the waters, 10 of them bearing the names of states. Thus 46 of our 48 states are represented by those giants of the waves. Of these, the battleships *Delaware* and *North Dakota* are of a type surpassing the famous *Dreadnought* of the British navy, being of 20,000 tons displacement and 25,000 horse-power, and carrying in their main batteries ten 12-inch and fourteen 5-inch guns. Those now in building are of larger size, the largest being the *Nevada* and *Oklahoma*, of 27,500 tons each. Their 21 knots speed is higher than that of most others of our battleships, while their length surpasses that of any other vessel in the American navy. To these great sea-going vessels must be added a number of turret monitors, double and single, chiefly of use for coast defense. The armored steel vessels of the American navy include 12 cruisers, with a considerable number of unarmored cruisers and gunboats while there is an important fleet of torpedo boats, numbering 32 in all, and 50 torpedo boat destroyers including those building. To these there have of late been added a number of vessels of a new type in naval architecture, the submarine, of which class the United States now possesses nearly 40. In the year 1908 the naval power of the United States was remarkably demonstrated by an enterprise novel in naval history, the circumnavigation of the globe by a fleet of sixteen battleships. Setting out from Hampton Roads in December, 1907, this splendid fleet returned there on February 22, 1909, after sailing around South America, and visiting Hawaii, New Zealand, Australia, Japan, China and Manila, and making its way home via the Suez Canal. Everywhere greeted with enthusiasm, its return demonstrated the skill of American builders and seamen in a striking manner, the great ships reaching port again in almost as perfect a state as when they set out, few and minor repairs being needed.

Coming now to the navies of foreign powers, we shall have to deal with them

THE VILLAGE OF NAZARETH

with brevity, confining ourselves to their comparative strength in war vessels afloat. Great Britain, which has long stood first in rank, has in its present navy about 60 battleships, 40 armored cruisers, 70 other cruisers, more than 300 torpedo boats and destroyers, and 60 submarines. Germany has 28 battleships, 14 armored and 21 other cruisers, and 150 torpedo boats and destroyers. France has 28 battleships, 22 armored and 19 other cruisers, 150 torpedo boats and destroyers and 61 submarines, a class of vessels to which the French navy department has paid much attention. The other great powers come in succession as follows: Japan, with 19 battleships, 13 armored and 15 other cruisers; Russia, with 13 battleships and 21 cruisers; Italy, with 13 battleships and 23 cruisers; and Austria-Hungary, with 9 battleships and 23 cruisers. These are also well supplied with smaller craft. The minor powers also possess navies of some strength. An important fact concerning these is that Brazil and Argentina are now having built three battleships each of greater size and power than any at present afloat.

Navy Yards. See *Dockyards.*

Naxos (nåks'os), or NAXIA, an island of the Grecian Archipelago, the largest of the Cyclades, length 18 miles; breadth, 12 miles; area, 170 square miles. It is hilly, but extremely productive. Pop. (1907) 25,185.

Nazareth (naz'å-reth), a small town in Palestine, 65 miles north of Jerusalem, is celebrated as the residence of our Saviour during his youth. It is surrounded on all sides by hills. The houses, which are of stone, are well built, with flat roofs. The principal edifices are the conventual buildings of the Franciscan monks, which include the Latin Church of the Annunciation. Pop. about 11,000.

Nazarites (naz'år-īts), or NAZIRITES, among the ancient Jews, persons who devoted themselves to the peculiar service of Jehovah for a certain time or for life. The law of the Nazarites (from the Hebrew *nazar*, to separate) is contained in Numbers vi. 1-21.

Neagh, LOUGH (lo*h* nā or nā'å*h*), a lake of Ireland, the largest in the British Isles, being 19 miles long by 12 miles broad, and covering an area of 153 square miles. It washes the counties of Antrim, Armagh, Tyrone and Londonderry. Its waters are well known for their petrifying properties.

Neal (nēl), DANIEL, an English dissenting clergyman, born in 1678; died in 1743; long pastor of a church in London. He wrote a *History of New England* and other works, but is best known by his *History of the Puritans* (1732-38).

Neale (nēl), JOHN MASON, clergyman of the English Church, born in 1818; died in 1866. He belonged to the High Church party, and was a voluminous writer, among his works being *History of the Holy Eastern Church; Essays on Liturgiology and Church History; Mediæval Hymns from the Latin; Hymns of the Eastern Church*, etc. He wrote a number of popular hymns.

Neander (nā-an'dėr), JOHANN AUGUST WILHELM, a Protestant theologian, born of Jewish parents at Göttingen in 1789; died at Berlin in 1850. He was early converted to Christianity, and was appointed extraordinary professor of theology at Heidelberg in 1812. In the same year, however, he accepted an invitation to the University of Berlin, where he spent the remainder of his life in uninterrupted labors for the good of the church and general learning. His chief works are his *Life of Christ*, in refutation of Strauss; his *General History of the Church;* and his *History of the Apostolic Church.*

Neanderthal Man (nā-an'dėr-tal), the fossil remains of a man which were found in a limestone cave in Neanderthal Valley, Prussia, and remarkable for their bestial characteristics. The skull is of peculiar form and less human and more Simian than any other known until very recently. Many archæologists hold it to be distinctive of a type of very ancient cave dwellers, while others maintain that its character is the result of abnormal conditions in the individual. Later discoveries of antique human remains of somewhat similar type, and especially the finding of a still more simian-like skull in Java, go far to sustain the former view.

Neap-tides (nēp-tīdz), tides which happen in the middle of the second and fourth quarters of the moon. They are the lowest tides. See *Tide.*

Neath (nēth), a town and river port on the Neath, in South Wales, in the county of Glamorgan, 7 miles E. N. E. of Swansea. It carries on a considerable trade, and the industries include copper smelting, tinplate-working, and the manufacture of chemicals. Near the town are the remains of Neath Castle and Abbey, both erected in the twelfth century. Pop. 17,590.

Nebo (nē'bō), or NABU, an ancient Assyrian and Babylonian deity, lord of the planet Mercury, and ruler

NEBRASKA.
Scale of Miles
0 10 20 40 60 80
Longitude 100° West from Greenwich
104° A 103° B 102° C 101° D 100° E 99° F 98° G 97° H 96° J 95°
1 2 3 4 5
43° 42° 41° 40° 39°
SOUTH DAKOTA
MINNESOTA
IOWA
KANSAS
MO.
COLORADO
WYOMING
Missouri R.
Niobrara R.
Platte R.
Republican R.
Kansas R.
Big Blue R.
Loup R.
Dismal R.
North Platte
South Platte
North Fork
South Fork
Middle Fork
Long Pine
Bassett
Newport
Nelligh
Meadow Grove
Norfolk Jc.
Norfolk
Wayne
Pilger
Winside
Pierce
Brunswick
Stafford
Inman
Hammond
Amelia
Atkinson
Neill.
Creighton
Verdigris
Niobrara
Bloomfield
Coleridge
Wausa
Randolph
Osmond
Laurel
Allen
Jackson
Hartington
Ponca
Newcastle
Emerson
Hubbard
Dakota
Dixon
Ponca
Jackson
Yankton
St. Helena
St. James
Santee
Paddock
Saratoga
Stuart
Winfield
Cuba
Anoka
Gross
Lynch
Bonesteel
Chamberlain
Salem
Sioux Falls
Luverne
Worthington
Sibley
Sheldon
Alton
Cherokee
Merrill
Sioux City
Correctionville
Maurice
Marion
Centerville
Scotland
Platte
Rosebud
Manderson
Interior
White R.
Westover
Fairburn
Minnekahta
Buffalogap
Ardmore
Story
Montrose
Whitney
Adelia
Harrison
Andrews
Glen
Belmont
Marsland
Agate
Ashbrook
Canton
Morrill
Alliance
Malinda
Mitchell
Cyrus
Scottsbluff
Gering
Bayard
Angora
Clematis
Antioch
Lakeside
Ellsworth
Bingham
Ashby
Hyannis
Whitman
Hecla
Mullen
Halsey
Thedford
Seneca
Cascade
Curlew
Pullman
Banner
Brownlee
Midvale
Perch
Elsmere
Duff
Butka
Erina
Bliss
Chambers
Clearwater
Oakdale
Elgin
Battlecreek
Madison
Stanton
Beemer
Westpoint
Dodge
Lyons
Wisner
Pender
Decatur
Oakland
Craig
Tekamah
Burt
Blair
Fort Calhoun
Omaha
South Omaha
Papillion
Bellevue
Plattsmouth
Nebraska City
Auburn
Falls City
Tecumseh
Beatrice
Fairbury
Crete
Milford
Seward
Lincoln
York
Henderson
Aurora
Hampton
Giltner
Hastings
Kenesaw
Juniata
Holstein
Roseland
Axtell
Holdrege
Arapahoe
Wilcox
Ragan
Oxford
Orleans
Indianola
McCook
Trenton
Stratton
Culbertson
Calvert
Rollwitz
Max
Benkelman
Cornell
Danbury
Lebanon
Wilsonville
Republican City
Bloomington
Riverton
Franklin
Bluehill
Alma
Campbell
Upland
Mildred
Red Cloud
Superior
Hebron
Chester
Reynolds
Thompson
Roblall
Steele City
Diller
Odell
Barneston City
Fairbury
Axtell
Marysville
Clyde
Mankato
Almena
Atwood
Colby
Stockton
Downs
Beloit
Miltonvale
Holton
Manhattan
TOPEKA
Kansas R.
Salmon Fork
Blue R.
Republican R.
Arcadia
Loup City
Ord
Greeley
Albion
Edward
Cedar Rapids
Belgrade
Fullerton
Genoa
Monroe
Platte Cen.
Lindsey
Columbus
Schuyler
Fremont
Scribner
Hooper
Clarkson
Leigh
Howell
Silver Creek
Sutton
Clay Center
Fairmont
Shickley
Ohiowa
Geneva
Exeter
Friend
Dorchester
Wilber
Swanton
Dewitt
Crab Orchard
Filley
Steinauer
Tablerock
Holmesville
Pawnee
Verdon
Stella
Rulo
Dawson
Humboldt
Dubois
Salem
Table Rock
Falls City
Barneston
Odell
Steele City
Diller
Sprs
Oak
Carleton
Belvidere
Hardine
Blue
Oak

of the hosts of heaven and earth, according to Babylonian inscriptions, especially honored in Borsippa. Statues of Nebo have been found in Nineveh, showing him with long beard and hair, and clad in a long robe.

Nebo.

Nebraska (nē-bras'-kȧ), one of the United States, bounded on the N. by South Dakota, E. by Iowa and Missouri, S. by Kansas and Colorado, and W. by Colorado and Wyoming. Area 77,520 sq. miles. The greater part of the State consists of gently undulating land with a slight inclination to the eastward. On the N. W. is a desolate tract known as the Mauvaises Terres, of Bad Lands, rich in interesting fossil remains. Timber is scarce. The principal rivers are the Missouri, which forms the boundary on the east; its great affluent, the Nebraska, or Platte, which, formed by two main forks, a northern and a southern, both from the Rocky Mountains, traverses the territory in an eastern direction; the Niobrara, which traverses the sterile sand hills of the north and flows into the Missouri; and the Republican fork of Kansas River, traversing the southern part of the State. The climate is, on the whole, fine, the mean temperature in summer being 70° to 74°, in winter from 22° to 30°. The soil, except in the northwest and southwest, is a deep rich loam underlaid by a porous clayey subsoil, and is thus admirably adapted to withstand drought. The principal crops are maize, wheat, oats, barley, potatoes, sorghum, flax, hemp and hay. The west is mainly adapted to grazing, and stock raising is largely carried on, cattle and horses requiring little protection or hand-feeding during winter. Manufactures are as yet generally restricted to the supply of local wants. The railway system centers in Omaha, the chief city, the Union Pacific Railway passing through the State. Limestone, sandstone and gypsum are abundant; coal of poor grade is found in limited quantity, but peat is abundant, and there is a good supply of salt. The chief towns are Omaha (by much the largest) and Lincoln (the State capital). At the head of the educational establishments stand the State University at Lincoln, the University of Omaha, at Bellevue, the Wesleyan University at University Place, and the Congregational College at Crete. In all the principal towns there are graded and high schools supported by general and local taxation, and a generous share of the public lands has been set apart for educational purposes. Nebraska came into the possession of the United States as part of Louisiana in 1808, was recognized as a separate territory in 1854, and was admitted into the Union as a State in 1867. Pop. 1,192,214.

Nebraska City, a city, the seat of Otoe County, Nebraska, on the Missouri River, about 35 miles S. of Omaha. It has a good river and railroad trade and a variety of manufactures. Here is the State institution for the blind and the Academy of the Annunciation. Pop. 5488.

Nebuchadnezzar (neb-ū-kad-nez'-ȧr; in Jeremiah and Ezekiel, *Nebuchadrezzar;* Greek, *Nabuchodonosor*), a king of Babylon, celebrated as the conqueror of Judah. He reigned from 604 to 561 B.C. according to the opinion of modern chronologists, or from 606 to 563 B.C. according to that of older chronologists. He was the son of Nabopolassar, by whom the kingdom of Babylon was definitely made independent of the Assyrian monarchy. In the fourth year of Jehoiakim, king of Judah (605-4 B.C.), he defeated Pharaoh-Necho, king of Egypt, at Carchemish (Circesium), on the Euphrates, after which he subjugated Syria and Palestine, carrying off with him the sacred vessels of the temple and the chief Jews into captivity. He destroyed Tyre in 585, and some years later he invaded and ravaged Egypt. During the peaceful years of his reign he rebuilt in a magnificent manner Babylon and many of the other cities of the empire, and constructed vast temples, aqueducts, and palaces, whose ruins still testify to his grandeur. His insanity and the events preceding are only known to us from the book of Daniel. Several inscriptions relating to his reign have recently been found.

Nebula (neb'ū-la), pl. NEBULÆ, in astronomy, the name given to certain celestial objects resembling white clouds, which in many cases, when observed through telescopes of sufficient power, have been resolved into clusters of distinct stars. As more and more powerful telescopes have been employed, the number of resolvable nebulæ has become greater and greater, and it is probable that many nebulæ irresolvable at

present may yet be shown to be star clusters by telescopes more powerful than those now employed. On the other hand, the spectroscope has shown that many nebulæ, among which are several that had hitherto appeared to be well authenticated clusters, consist, in part at least, of masses of incandescent gas. The recent researches of Mr. Norman Lockyer render it probable that nebulæ include clouds of meteors, which, by their continual impact against one another, produce the heat, light, and gaseous matter that are detected by our telescopes and spectroscopes. A few of the great nebulæ, such as those of Orion, Argo Navis and Andromeda, are visible to the naked eye; but most are telescopic, and of these thousands are now known to astronomers. Nebulæ have been classified as follows:— (1) *Resolvable nebulæ*, and such as apparently only require instruments of increased power to resolve them into separate stars; (2) *Irresolvable nebulæ*, showing no appearance of stars; (3) *Planetary nebulæ*, so called because they slightly resemble in appearance the larger planets; (4) *Stellar nebulæ*, those having in their center a condensation of light; and (5) *Nebulous stars*, a bright star often seen in the center of a circular nebula, or two bright stars associated with a double nebula, or with two distinct nebulæ near each other.

Nebular Hypothesis (neb′ū-lår hī-poth′e-sis), a theory by means of which Laplace (before the existence of nebulous matter in the universe had been discovered by means of the spectroscope) accounted for those features of the solar system which must be regarded as accidental in the Newtonian philosophy. This theory supposes that the bodies composing the solar system once existed in the form of a nebula; that this had a revolution on its own axis from west to east; that the temperature gradually diminishing, and the nebula contracting by refrigeration, the rotation increased in rapidity, and zones of nebulosity were successively thrown off in consequence of the centrifugal force overpowering the central attraction. These zones being condensed, and partaking of the primary rotation, constituted the planets, some of which in turn threw off zones which now form their satellites. The main body being condensed towards the center, formed the sun. The theory was afterwards extended so as to include a cosmogony of the whole universe. Serious objections have been made to the hypothesis and rival theories of recent origin have been advanced.

Necessity (ne-ses′i-ti), a word used in philosophical and theological discussions with varying senses, but very commonly implying the operation of a blind fate or destiny, and absence of free will. See *Will*.

Necho (ne′kō), or NEKU, a king of Egypt, mentioned in 2 Kings xxiii, 29 and Jerem. xlvi, 2. He belonged to the twenty-sixth dynasty; succeeded his father Psammeticus I, and reigned from B.C. 610 to 594. He extended his dominions from the S. of Syria to the Euphrates; defeated Josiah, king of Judah, at Megiddo, but was ultimately driven back by Nebuchadnezzar.

Neck, the part of an animal's body which is between the head and the trunk, and connects them. The bones of the neck in man, and in nearly all other mammals, are the seven cervical vertebræ.

Neckar (nek′år), a river of Germany which rises in the Black Forest, in Würtemberg, and flows through Baden into the Rhine at Mannheim, after a course, including windings, of about 240 miles. It is navigable half its course for small vessels.

Necker (nek′ėr), JACQUES, a French minister of finance, born at Geneva in 1732; died in 1804. He became clerk in a Paris banking house in 1750, and afterwards accumulated a large fortune as a banker. In 1776 he received an appointment to the treasury,

Necker.

the direction of which he retained for five years. Malversation under the preceding reign had caused a large deficit, to which the American war made great additions. Necker endeavored to meet

the exigency by loans and reforms, and above all to fund the French debt and establish annuities under the guarantee of the state. His suppression of abuses had created him many enemies at court, and shortly after the publication of his famous *Compte Rendu*, in which he furnished a clear statement of the condition in which he had found things, of what he had done and what he intended to do, he resigned and retired to Switzerland, where he published his *Administration of the Finances*, which had an immense circulation. The errors of Calonne, who next had the management of the state finances, increased Necker's reputation; and in 1788 he was recalled as controller general. His convictions led him to support the convocation of the States General and the giving a double representation to the *tiers état*. The States General were actually summoned to meet on May 1, 1789; but not long after the advisers of the king succeeded in inducing him to give Necker his dismissal, and to order him to leave the kingdom. No sooner was his removal known than all Paris was in a ferment. The storming of the Bastille followed (July 14), and the king found himself compelled to recall the banished minister. His return to Paris resembled a triumphal procession. His first object was to restore tranquillity and security of person and property. But he was not equal to the political or even the financial crisis, and resigned in September, 1790. He passed the rest of his life in Switzerland, where he occupied himself in writing political and religious treatises. Necker's daughter was the well-known Madame de Staël.

Necromancy (nek'ru-man-si), the divination of the future by questioning the dead. This superstition originated in the East, and is of the highest antiquity. We find mention made of necromancy in the Scriptures, where it is strongly condemned. In the Odyssey Homer has made Ulysses raise the shade of Tiresias from the infernal regions. In many parts of Greece there were oracles of the dead, the origin of which is lost in the obscurity of history. Although this practice has been condemned by the Christian Church from the very first, it has not yet entirely ceased. The term is often extended so as to include the general art of magic.

Necroph'orus. See *Burying-beetle.*

Necropolis (nek-rop'u-lis; literally, 'city of the dead'), a name originally applied to a suburb of Alexandria devoted to the reception of the dead, and hence extended to the cemeteries of the ancients generally. The name has also been given to some modern cemeteries in or near towns.

Necrosis (nek-rō'sis; literally, 'mortification'), a medical term signifying the death of the bone substance. It is a condition of the bone substance corresponding to what gangrene is in the soft parts, thus distinguished from *caries*, which corresponds to ulceration in the soft parts. Necrosis is usually a result of inflammation of the bone, and is often attributed to cold, but frequently it is due to constitutional disease.

Nectandra (nek-tan'dra), a genus of forest trees, natives of South and Central America. See *Greenheart.*

Nectar (nek'tar), in Greek mythology, the drink of the gods, which was imagined to contribute much towards their eternal existence. It was said to impart a bloom, a beauty and a vigor which surpassed all conception, and together with ambrosia (their solid food) repaired all the decays or accidental injuries of the divine constitution.

Nectarine (nek'târ-in), a fruit which differs from the peach only in having a smoother rind and firmer pulp, being indeed a mere variety of peach. See *Peach.*

Nectary (nek'tâ-ri), the name given by Linnæus to every part of a flower that contains or secretes a saccharine fluid, or even to every abnormal part of a flower.

Nectocalyx (nek-tō-kal'iks), in zoology, the swimming-bell or disk of a medusa of jelly-fish, by the contractions of which it is propelled through the water.

Needham (nēd'am), a village of Needham township (town), Norfolk County, Massachusetts, 12 miles s. w. of Boston. It has manufactures of hosiery, knit-goods, etc. Pop. of town 5026.

Nedjed. See *Nejd.*

Needell (nē'del), Mary Ann, novelist, born at London, England, in 1830. She published *Ada Gresham* in 1851, and after 1881 numerous novels, the best-known being *Julian Karslake's Secret* (1881); *Stephen Ellicott's Daughter* (1891), and *The Vengeance of James Vansittart* (1895).

Needle (nē'dl), a small instrument of steel, pointed at one end, and having an eye or hole in it through which is passed a thread, used for sewing. From very ancient times needles of bone,

ivory, wood and bronze have been used. The manufacture of steel needles was first introduced into England in the reign of Elizabeth. The operations that an ordinary sewing needle goes through are very numerous, though of late many improvements have been introduced which reduce the number of separate operations, and many of the needle-making processes are performed by machinery at a great saving of time and labor. The chief of the ordinary operations that a sewing needle goes through in their proper order are such as follows:—The cutting of the steel wire into lengths sufficient for two needles; the pointing of these at both ends on a grindstone by fifty or sixty at a time; the cutting of each length through the middle to give two needles; the flattening of the heads by a blow with a hammer; the piercing of the eyes with a punch applied first on one side, then on the other; the trimming of the eyes; the grooving and rounding of the head; hardening, tempering, straightening; polishing, which is done by making some 500,000 needles into a cigar-shaped bundle along with emery and oil and rolling them backwards and forwards under a weight. Modifications of the ordinary sewing needle are used in the various forms of sewing machines, in sail making, bookbinding, glovemaking, darning, staymaking, etc. The name is also applied to implements of iron or steel, bone, wood, etc., used for interweaving or interlacing a thread or twine in knitting, netting, embroidery, jacquard loom weaving, etc., and formed in various ways, according to the purpose for which they are intended; as also to sundry long and sharp-pointed surgical instruments, some employed for sewing, others for other purposes, as in operations for cataract. The small piece of steel pointed at both ends and balanced on a pivot, as in the compass and some forms of telegraphic instruments, is also called a needle, and the term is used for various other objects.

Needle-gun, a breech-loading rifle the cartridge of which contained a small quantity of detonating powder which was exploded by the rapid darting forward of a needle or small spike. It is now superseded by weapons of superior efficiency. See *Rifle*.

Needle-ore, acicular bismuth glance; native sulphide of bismuth, lead and copper occurring imbedded in quartz in long, thin, steel-gray crystals, marked with vertical striæ, and apparently in four or six-sided prisms. It consists of lead 35.8, copper 11, bismuth 36.7, and sulphur 16.5, and usually accompanies native gold.

Needles, The, a cluster of insulated chalk rocks in the English Channel, off the west extremity of the Isle of Wight. They owe their name to their pyramidal and pointed shape. The Needles Lighthouse, on the most westerly of the group, has an occulting light 80 feet above high-water, visible for 14 miles.

Neef (nāf), or Neefs, Pieter, Flemish painter, born at Antwerp in 1570; died in 1651. He excelled in architectural subjects, the figures in his pictures being frequently by Teniers and other masters.

Neenah (nē′na), a city of Winnebago County, Wisconsin, on Fox River, 30 miles N. of Fond du Lac. The river affords great waterpower, and there are manufactures of ploughs, stoves, flour, paper, boots and shoes, machinery, etc. Pop. 5734.

Neer (nār), Aart van der, a Dutch landscape painter, born at Amsterdam in 1613; died in 1683. His chief subjects were canal scenes by moonlight, conflagrations at night, and winter landscapes. His son, Eglon Hendrick, born in 1643, died in 1703, was also an excellent painter, devoting himself chiefly to genre subjects.

Neerwinden (nār′vin-dėn), a village in the province of Liége, 16 miles from Louvain. It is the scene of the defeat of the allied English, Dutch and Austrian armies by the French in 1693, and the defeat of Dumouriez by the Austrians in 1793.

Ne exeat Regno ('let him not go out of the kingdom'), in English law, a writ prohibiting the person against whom it is directed from leaving the kingdom, as when a person who owes an actually due equitable debt meditates going abroad to avoid payment.

Negapatam (neg-*a*-p*a*-täm′), a town and chief port of Tanjore District, Madras Presidency. It was an early settlement of the Portuguese; was taken by the British in 1781. Pop. 57,190.

Negaunee (nē-gą′nē), a city of Marquette County, Michigan, 12 miles S. of Marquette. It is in an iron mining district with very large ore deposits and has extensive iron mining interests with mines and blast furnaces within the city limits. Pop. 8460.

Negligence (neg′li-jens), in law, the omission to do that which ought to be done. When such want of care results in injury to another, or involves a wrong done to society, it renders the party guilty of negligence

liable to either an action for damages or trial for misdemeanor. In law there are recognized three degrees of negligence: *ordinary*, the want of ordinary care or diligence; *slight*, the want of great care or diligence; and *gross*, the want of slight care or diligence. The person charged with negligence must have been under an obligation to exercise care or diligence either assumed by contract or imposed by law. An alleged act of negligence must always be the proximate cause of the injury sustained; but any injury caused to a person by another who at the time is exercising due care is not actionable. The question of negligence is usually one for a jury, and the onus of proof rests on the pursuer, except when the thing resulting from the negligence speaks for itself. A master is responsible for the negligence of his servants, but in no case can redress be had where contributory negligence on the part of the pursuer is proved.

Negrais (nē-gris), a cape at the S. W. extremity of the coast of Bassein, Lower Burmah.

Negritos (ne-grē'tōz), or NEGRILLOS, a name given to several negro-like races inhabiting the islands, etc., of Southeastern Asia, and often confounded with the Papuan race. The chief tribes are the Aëtas, the indigenous people of the Philippine Archipelago, still inhabiting the interior of Luzon and some other islands; the Samangs of Malacca; and the Mincopies inhabiting the Andaman Archipelago. They are dwarfish in stature, averaging from 4 ft. 6 in. to 4 ft. 8 in. in height; the nose small, flattened or turned up at the apex, and the hair soft and frizzled. They resemble in size and in some other particulars the pigmy tribes of Africa. The various tribes speak distinct and mutually unintelligible dialects. A tribe of the same type has recently been found in New Zealand.

Negro (nē'grō), the name of numerous rivers, both large and small. See *Rio Negro*.

Negroes (nē'grōz), a race of the human species indigenous to the Soudan and Guinea, though the term is often extended so as to cover all the tribes inhabiting Africa from the southern margin of the Sahara as far as the territory of the Hottentots and Bushmen, and from the Atlantic to the Indian Ocean. These tribes are all dark-colored, yellow, copper-red, olive, or dark-brown, passing into ebony-black. The typical negro, however, is described as having a black skin, woolly or crisp hair, a protuberant mouth with thick lips, nose thick and flat, thick narrow skull, flat and receding forehead, hair of the face scanty, thorax compressed, flat buttocks, long arms, knees bent outward, calves weak, and feet comparatively flat with long heels. The brain, though essentially similar to that of the white races, is not so large, averaging about 5 ounces less than that of the white man. The negro as a rule differs as much from the whites in mental as in physical characteristics, though there are many individual exceptions. He is very receptive, and in that which requires imitation he is well developed, but in that which requires independent thought he stands on a low stage. He has less nervous sensibility than the white man and can flourish in climates fatal to the higher races, and the race does not diminish in contact with civilization. Certain negro tribes of Africa present a surprising picture of barbaric civilization from contact with Mohammedanism. The slave system has taken great numbers of negroes from their native country, mostly to America and the West India Islands, where there has been considerable intermixture of races. By the census (1910) there were 9,828,296 persons of African descent in the United States, many of whom hold good positions in life. Negroes also rise to superior positions in the West Indies and elsewhere.

Negro Minstrelsy, a species of music of a quaint and simple kind, which originated among the negroes of the southern United States, and was first made popular at public entertainments by E. P. Christy, the originator of the troupes of imitation negro musicians. The words of the songs are generally in broken English, and the harmonies almost entirely limited to the chords of the tonic and dominant. The bones and banjo are the chief accompanying instruments.

Ne'gropont. See *Eubœa*.

Negros (nā'grōs), an island in the Asiatic Archipelago, belonging to the Philippines, and separated from Panay by a strait about 15 miles wide. Length 130 miles; average width 24 miles; area about 3800 sq. miles. In the central mountainous part of the island are a considerable number of Negritos, but the inhabitants are chiefly Malays. Sugar is the chief product. Pop. 460,776.

Negundo (ne-gun'dō), a genus of North American trees, containing only one species, *N. aceroides*, a small but handsome tree, with light-green twigs and drooping clusters of small greenish flowers.

Negus (nē'gus), a drink made of port or sherry wine mixed with hot water, sugar, nutmeg and lemon juice; so called from Colonel Negus, the inventor.

Nehemiah (nē-he-mī'å), a distinguished and pious Jew, who was born in captivity, but was made the cup-bearer of Artaxerxes Longimanus, king of Persia. He was sent, B.C. 444, as governor to Jerusalem, with a commission to rebuild the walls and gates of that city. He accomplished his purpose, but not without difficulties, arising partly from the poverty of the lower classes of the people, and partly from opposition of the Ammonites and other foreign settlers. The *Book of Nehemiah* contains Nehemiah's account of his proceedings, with other matter which forms a supplement to the narration contained in the *Book of Ezra*.

Neilgherry Hills (nēl'ge-ri; properly *Nilgiri*, that is 'blue mountain'), a district and range of mountains in Madras Presidency, South Hindustan. The district is bounded by Mysore, Coimbatore and Malabar; area, 957 sq. miles. It consists of a nearly isolated plateau, with an average elevation of over 6000 feet. There are six peaks over 8000 feet in height, the highest being Dodabetta, 8760 feet. The chief town is Utakamand (Ootacamund), which is a valuable sanitarium. The district produces coffee, tea and cinchona.

Neisse (nī'sė), a fortified town, district of Oppeln, Prussian Silesia, on a river of same name, 47 miles S. S. E. of Breslau. It is generally well built, and has some interesting buildings, especially the fine church of St. James, completed in 1440. Its manufactures are unimportant, but it has an active trade. Pop. (1905) 25,394.

Neith (nēth), or NEITHA, an Egyptian goddess who was worshiped especially as a local divinity at Sais, in Lower Egypt. She had some of the characteristics of the Greek Athēnē, or Minerva.

Nejd, or NEDJID (ned'jed; Arab. 'elevated country'), a term sometimes used as an element in Arabic place names, but used absolutely to signify the country in the interior of Arabia forming the central Wahabi kingdom. A great part of its surface is sandy desert interspersed with fertile spots. The more elevated districts feed immense droves of camels and the best breeds of Arab horses. Its chief town is Riad (28,000 inhabitants), the Wahabi capital.

Nejin, NIEJIN, or NYESHIN, a town in Russia, in the government of Czernigov, on the left bank of the Oster, about 80 miles N. E. of Kiev. Pop. 43,030.

Nelaton (nā-lå-tōn), AUGUSTE, a noted French physician and surgeon, born in 1807; died in 1873. He studied medicine at Paris, and graduated as doctor in 1836. Soon after he was appointed hospital surgeon and private lecturer in the faculty of medicine in the University of Paris. From 1851 to 1867 he was professor of clinical medicine. In 1866 he was appointed surgeon to Napoleon III, and was created a senator by imperial decree in 1868. He was specially renowned for his skill in operating for the removal of calculus, and was the inventor of a new method of operating in this disease. He published several works on surgery.

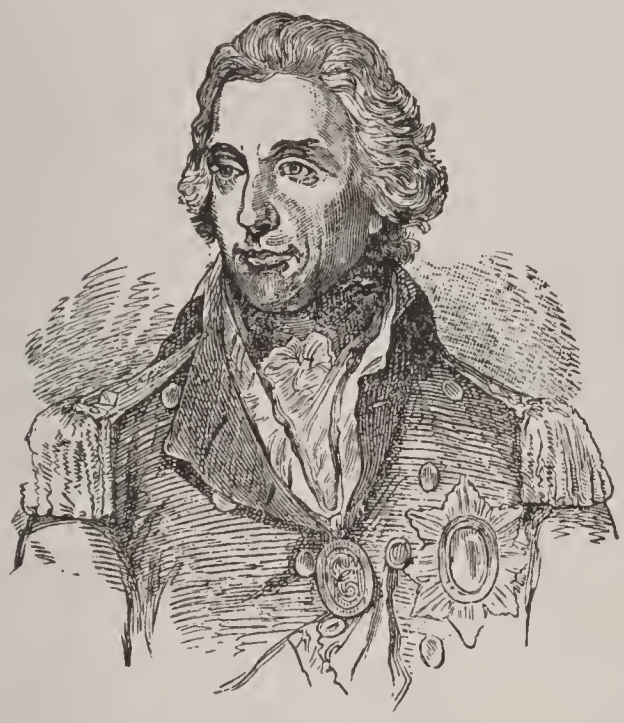
Nellore (nel-lor'), a town in India, in the Presidency of Madras, capital of district of the same name. It is a tolerably clean and airy town, and has railway and canal communication with other parts of the country. Pop. 32,040. The district lies on the Coromandel coast; area, 8739 sq. miles. It is famous for its breed of cattle.

Nelson (nel'sun), a town and provincial district in New Zealand, in the northwest of South Island. The town, which is a seaport, is situated on a small harbor at the bottom of Blind Bay, in the county of Waimea. It has a cathedral and churches of various denominations, a literary institute and museum, theater, and numerous fine public and business buildings. Leather making, brewing, fruit-preserving, etc., are among the industries. Steamers ply regularly to all the neighboring ports. Pop. 8164. The district has an area of 10,468 sq. miles. Although agriculture is now carried on to a considerable extent, still the great wealth of the district lies in its minerals. Unlimited beds of excellent iron ore, lead and copper ores, coal and gold, both alluvial and quartz, are all wrought to a considerable extent.

Nelson, or NELSON IN MARSDEN,' a town in N. E. Lancashire, England, 3½ miles N. E. of Burnley. There are various manufactories, and coal is worked in the neighborhood. Pop. (1911) 39,485.

Nelson, HORATIO, VISCOUNT, a celebrated British admiral, was born in 1758, at Burnham Thorpe, in Norfolk (where his father was rector); died in 1805. At the age of twelve he entered the navy as a midshipman, and in 1773 accompanied Commodore Phipps in an ex-

pedition towards the north pole. In 1777 he was made a lieutenant, and in 1779 raised to the rank of post-captain. He distinguished himself in an attack on Fort Juan, in the Gulf of Mexico, and on other occasions, and remained on the American station till the conclusion of peace. He afterwards commanded the *Boreas* frigate, and was employed to protect the trade of the Leeward Islands. On the commencement of the war with the French Republic he was made commander of the *Agamemnon*, of sixty-four guns (1793), with which he joined Lord Hood in the Mediterranean, and assisted at the siege of Bastia (May, 1794). At the siege of Calvi (July 10, 1794) he lost an eye. For his gallantry at the battle of Cape St. Vincent (Feb. 14, 1797) he was made rear-admiral of the blue, and appointed to the command of the inner squadron at the blockade of Cadiz. His next service was an attack on the town of Santa Cruz, in the Island of Teneriffe, in which he lost his right arm. In 1798 he joined Lord St. Vincent (Admiral Jervis), who sent him to the Mediterranean to watch the progress of the armament at Toulon. Notwithstanding his vigilance, the French fleet which conveyed Bonaparte to Egypt escaped. Thither Nelson followed, and after various disappointments he discovered the enemy's fleet moored in the Bay of Aboukir, where he obtained a most complete victory, all the French ships but two being taken or destroyed (August 1, 1798). This achievement was rewarded with the title of *Baron Nelson of the Nile* and a pension of £2000. His next service was the restoration of the King of Naples, which was accompanied with circumstances of revolting cruelty, generally attributed to the influence of Lady Hamilton (which see), the wife of the English ambassador. In 1801 he was employed on the expedition to Copenhagen under Sir Hyde Parker, in which he effected the destruction of the Danish ships and batteries. On his return home he was created viscount. When hostilities recommenced after the Peace of Amiens Lord Nelson was appointed to command the fleet in the Mediterranean, and for nearly two years he was engaged in the blockade of Toulon. In spite of his vigilance the French fleet got out of port (March 30, 1805), and being joined by a Spanish squadron from Cadiz, sailed to the West Indies. The British admiral hastily pursued them, and they returned to Europe and took shelter at Cadiz. On the 19th of October the French, commanded by Villeneuve, and the Spaniards by Gravina, ventured again from Cadiz, and on the 21st they came up with the British squadron off Cape Trafalgar. An engagement took place, in which the victory was obtained by the British, but their commander was wounded in the back by a musket-ball, and shortly after expired. His remains were carried to England and interred in St. Paul's Cathedral. Monuments to his memory have been erected in various cities.



Admiral Lord Nelson.

Nelson, KNUTE, statesman, born in Norway in 1843, came to the United States in 1849. He took part in the Civil war, became a lawyer, was elected to the Wisconsin and Minnesota legislatures, and was a member of Congress 1883-89. He was governor of Minnesota 1892-95 and was elected to the United States Senate in 1895. He is still a member, ranking among the Progressives.

Nelson River, a river of Canada, which issues from Lake Winnipeg, and after a tortuous course of about 350 miles, during which it passes through a series of lakes, falls into Hudson Bay. It is navigable for small steamers for about 80 miles.

Nelsonville (nel'son-vil), a village of Athens County, Ohio, on the Hocking River, 14 miles N. W. of Athens. The mining of coal is its principal business. It has a foundry and machine shops and several mills. Pop. 6082.

Nelumbium (ne-lum'bi-um), a genus of aquatic plants inhabiting the fresh waters of the temperate parts of the world, type of the nat. order Nelumbiaceæ, having large polypetalous flowers with numerous stamens. The best-known species is *Nelumbium speci-*

ōsum, the Hindu and Chinese lotus, a magnificent water-plant of the rivers and ditches of all the warmer parts of Asia, the Malay Archipelago, Australia, and also found in the Nile (formerly at least). The numerous canals of China are filled with it, its tubers being there used as a culinary vegetable. It is a most beautiful plant, with peltate leaves and handsome rose-colored flowers on tall stalks, and is frequently cultivated in hothouses. In Asia it is generally deemed sacred, and figures in

Ripe receptacle of *N. speciosum.*

Nelumbium speciosum (Lotus).

religious rites. *N. luteum*, the yellow water-bean of the southern United States, has starchy rhizomes, with tubers like those of the sweet potato, which are used for food.

Nematelmia (nem-a-tel'mi-a), the division of Scolecida that includes those parasitic worms which possess bodies of rounded or cylindrical shape. Among the most familiar are the *Gordiacĕa*, or 'hair-worms.' These possess slender hair-like bodies, and are found as parasites in the interior of beetles and other insects during the first stages in their development. On arriving at sexual maturity they escape from the bodies of their hosts and seek the water of pools, in which the eggs are deposited in the form of lengthened chains. The embryos produced from these ova are provided with a retractile proboscis and hooks, by means of which they penetrate the bodies of insects, and there develop into the sexually mature worms. Superstition formerly credited horsehairs, introduced into water, with the remarkable property of becoming transformed into these living creatures. Another order of the Nematelmia is that of the *Nematōda*, which includes several familiar forms, as the *Ascăris*, or common 'round-worm,' of the human intestines; the *Trichīna*, famous for its fatal effects in man; the *Filaria*, or 'Guinea-worm.' The Nematoda, although mostly parasitic, also comprise many free and non-parasitic forms.

Nematocyst (nem-at'o-sist), in physiology, a 'thread-cell' of the Cœlenterata, that is, a cell or minute sac, in the interior of which is a long filament, often serrated or provided with spines, and capable of being swiftly protruded. It is to their nematocysts that the power of stinging possessed by many of the Cœlenterata is due.

Nemato'da. See *Nematelmia.*

Nemean Games, (ne-mē'an), Greek games, held in the valley of Nemea in Argolis, where Hercules is said to have killed the Nemean lion. They recurred ordinarily every second year, and were similar in character to the other Greek games. (See *Games.*) Eleven of Pindar's odes are in celebration of victors at the Nemean games.

Nemertida (nem-er'ti-da), a group of the Scolecida (Annuloida), represented by the 'ribbon-worms' found on the sea-coasts of various countries. They possess flat, ribbon-like bodies, which, as in the *Borlasia* of the British coasts, may attain a length of more than 15 feet. Some of the species of the type-genus *Nemertes* attain a length, in their extended state, of 30 or 40 feet, which they can suddenly contract to the length of 3 or 4 feet.

Nemesis (nem'e-sis), a female Greek divinity who appears to have been regarded as a personification of the righteous anger of the gods, inflexibly severe to the proud and insolent, *i.e.*, retributive justice. In the theogony of Hesiod she is the daughter of Night, the avenging Fate who checks and punishes the favorites of Fortune.

Nemi (nā'mē), a lake in Italy, about 17 miles south of Rome. It is evidently the crater of an extinct volcano; has a circuit of 5 miles, and discharges its waters through an ancient tunnel. A village of the same name lies on the N. E. shore.

Nemours (né-mör), a French town in the department of Seine-et-Marne, 10 miles south of Fontainebleau, of some historical importance. Pop. (1906) 4814.

Nen, an English river, rises in the N. w. of Northamptonshire, and falls into the Wash after a course of 70 miles.

Nenagh (nen'ä), a town in Ireland, county of Tipperary, 28 miles northeast of Limerick. It has the remains of an old castle, and does a good general trade. Pop. about 4700.

Nennius (nen'ni-us), the supposed author of a collection of chronicles and genealogies styled *Historia Britonium*, written in Latin, and reaching down to A.D. 655. The author is supposed to have been a monk at Bangor in Wales. The authorship as well as the authenticity of Nennius have been much disputed.

Neocomian (nē-ō-kō'mi-an), in geology, a term applied to the lower greensand and Wealden.

Neo-Darwinism, the Darwinian theory as held by many more recent scientists. A number of difficulties have arisen in the study of the theory of natural selection, and several hypotheses have been advanced in their explanations, so that, though the theory is still strongly maintained, it has been modified in important details by the Neo-Darwinists.

Neogene (nē'ō-jēn), in geology, a name given by some geologists to the Pliocene and Miocene tertiaries to distinguish them from the older Eocene strata.

Neo-Lamarckism, the views at present entertained, especially by American scientists, concerning the Lamarckism theory of evolution. This maintains that change in species is largely due to 'use and effort,' the continued attempts of animals to take the best advantage of surrounding conditions having led to gradual changes of structure fitting them to external circumstances. Many modern scientists hold a modified view of this doctrine.

Neolithic (nē-ō-lith'ick), in archæology, a term applied to the more recent of the two periods into which the stone age has been subdivided, as opposed to *palæolithic*. During this period there is found no trace of the knowledge of any metal excepting gold, which it would seem had sometimes been used for ornaments. The Neolithic stone implements are finely shaped and polished, as contrasted with the roughly wrought palæolithic stones, and are found in connection with the remains of extinct animals.

Neomorpha. See *Huia-bird.*

Neon (nē'on), a recently discovered gaseous chemical element existing in the air. It was found by Ramsay and Collie, English physicists, in 1898, who separated it from argon while experimenting with liquid air. Its chemical number is 14.67, and it has the inertness of argon.

Neophron (nē'ō-fron), a genus of birds of the vulture family, one species of which (*N. percnoptĕrus*) inhabits Southern Europe, Egypt and Asia. It is known as the Alpine or Egyptian vulture, Pharaoh's chicken, etc.

Neo-platonism. See *New Platonists.*

Neotropical (nē-ō-trop'i-kal), a term applied to one of the six regions into which zoologists divide the surface of the earth, based on their characteristic fauna or collection of animal life. The Neotropical region includes Central America south of the Isthmus of Tehuantepec and South America.

Neottia (nē-ot'sha), a small genus of Orchidaceæ, readily distinguished by its habit, all the species being leafless brown-stemmed plants, with sheathing scales in place of leaves.

Neozoic (nē-u-zō'ik; Gr. *neos*, new, *zōē*, life), in geology, a name under which Prof. E. Forbes proposed to include all the strata from the beginning of the Trias up to the most recent deposits; the *Mesozoic* and *Cainozoic* of other palæontologists. Forbes suggested this classification on the ground that while there is a widely-marked distinction between Palæozoic and Mesozoic fossils, there is no essential difference between Mesozoic and Cainozoic.

Nepa (nē'pa), a genus of hemipterous insects, popularly known by the name of 'water-scorpions.'

Nepal (ne-pạl'), Nipal', or Nepaul', a small independent state situated on the N. E. frontier of Hindustan, on the southwest slope of the highest part of the Himálaya range, between lat. 26° 25′ and 30° 17′ N., and lon. 80° 61′ and 88° 14′ E.; area, about 54,000 square miles. The country is a table-land from 3000 to 6000 feet above the level of the sea. It contains within its boundaries the highest mountains in the world—Mount Everest, Dhawalagiri, and on its eastern borders Kanchinjinga. From the mountains southwards, the land gradually descends, forming four distinct terraces, differing in climate and vegetation. The climate is on the whole temperate except in the most elevated districts in the north, where it is very cold. The most important rivers are the Ghogra or Kanar, the Gandak and the Kusi, all of which rise in Tibet on the north beyond the Himálayas. Magnificent forests of sal, sisoo, and toon trees stretch along the declivities of the lower hills into the adjacent plains. The forests higher up exhibit a greater variety, gradually as-

suming more and more of an Alpine character. The principal products are rice, wheat, hemp, cotton, tobacco and madwheat, hemp, cotton, tobacco, and madder. Pasturage is on the whole scarce and indifferent. The sheep and goats, however, have fine wool. Horses are imported from Tibet. The wild animals are elephants, black bears of great size, hogs, hog-deer, foxes, jackals and a few tigers. The manufactures of Nepal are confined chiefly to coarse cotton cloth. The trade is chiefly carried on with British India and Tibet. The inhabitants are descended from successive tides of invaders, the Goorkhas (which see) and Newars predominating. The government is despotic, the Maharaja being the nominal ruler only, as the supreme power is in the hands of the prime minister. A British resident is stationed at Khatmandu, the capital. Pop. estimated by the natives to be about 5,200,000.

Nepenthe (ne-pen'the), a drug which was fabled by the ancient poets to banish the remembrance of grief and to cheer the soul. It is thought by many to have been opium.

Nepenthes. See *Pitcher-plant.*

Nepeta (nep'e-ta), a genus of labiate plants, of which the catmint is a typical species.

Nephelin (nef'e-lin), or NEPH'ELITE, a mineral found mixed with other substances, in plutonic or volcanic rocks, in small masses or veins, and in hexahedral crystals. It is usually white or yellow.

Nephe'lium. See *Litchi, Longan.*

Nephrite (nef'rīt), a mineral, an aluminous variety of amphibole among the bisilicates, of a leek-green color, massive, and in rolled pieces, remarkable for its hardness and tenacity. It was formerly worn as a remedy for diseases of the kidneys. A unisilicate, zoisite, is also spoken of as nephrite, as is jade. All three are capable of fine polish, and have been used since prehistoric times for ornaments, weapon-handles, and even weapons.

Nephthys (nef'this), an Egyptian deity, the wife of Seth. Her proper sphere was the nether world, though she occurs in the upper world as the instructress of Horus. She is associated as one of a tetrad with Osiris, Isis and Horus. She was called by the Greek writers *Teleutē* (End), *Aphroditē* and *Nikē* (Victory).

Nepomuk (nā'po-mök), JOHANN VON, the patron saint of Bohemia. He was born at Pomuk in Bohemia about 1330; was martyred in 1393. In 1378 he became court preacher to King Wenceslaus (Wenzel), but incurring the displeasure of that monarch he was cruelly tortured and thrown from the bridge over the Moldau into the river (1393). In the course of the fifteenth, sixteenth and seventeenth centuries many legends gathered round his name, and in 1729 Benedict XIII canonized him. The day consecrated to his memory is the 16th of May.

Nepos. See *Cornelius Nepos.*

Neptune (nep'tūn), the chief marine divinity of the ancient Romans. When the Greek mythology was introduced into Rome he was completely identified with the Greek Poseidōn, all the traditions relating to whom were transferred by the Romans to their own deity. In art he is usually represented as armed with a trident, and the horse and the dolphin are his symbols. See *Poseidōn.*

Neptune, in astronomy, the most distant of the known planets, its mean distance from the sun being 2,791,600,000 miles. The eccentricity of its orbit is .00872; its inclination to the plane of the ecliptic is 1° 47′. Its apparent diameter is about 2.7″. Its real diameter is estimated at 34,800 miles, and it seems to have very little polar compression. Its mass is about 16¾ times that of the earth, and it revolves round the sun in 164.6 years. It has one satellite, whose period is 5 days 21 h. 2 m. 44s., and whose mean distance from the planet is 230,000 miles. Neptune was discovered in 1846 in a position indicated independently by Leverrier and Adams, and deduced from a series of recondite mathematical calculations to find a body which could account for the long-observed perturbations of Uranus.

Neptunian Theory, a name given to a geological theory of Werner's, which referred the formation of all rocks and strata to the agency of water; opposed to the *plutonic, igneous,* or *Huttonian theory.*

Nérac (nā-rak), a town of France, department of Lot-et-Garonne, 16 miles W. S. W. of Agen, on the banks of the Baise. Here Henry IV held his court when King of Navarre, and Calvin and other reformers found an asylum with Queen Margaret. Pop. 4055.

Nerbudda, or NARBADA (nar-ba'dä), a river of Hindustan, which rises on the northwest confines of the ancient territorial division of Gondwana, in the Central Provinces, flows first west and northwest across a plateau, then west, inclining gently to the south,

forming part of the boundary between the Central Provinces and Indor, and falls into the Gulf of Cambay after a course of about 800 miles. In religious sanctity it ranks second only to the Ganges. Nerbudda is also the name of a division of the Central Provinces of India; area, 17,513 sq. miles.

Nerchinsk (nyer'chinsk), a Siberian mining town, province of Transbaikal, 540 miles E. of Irkutsk. The neighborhood yields gold, silver, lead, iron and tin, and a considerable fur trade is carried on. Pop. 6713.

Nereidæ (ne-rē'i-dē), NE'REIDS, the sea-centipedes, of which the genus *Nereis* is the type.

Nereïds (nē're-idz), in classical mythology, sea nymphs, daughters of Nereus and Doris, and constant attendants on Poseidon or Neptune. They are represented as riding on sea-horses, sometimes with the human form entire, and sometimes with the tail of a fish. They were distinguished on the one hand from the Naiads or the nymphs of fresh water, and on the other hand from the Oceanides or nymphs of the ocean.

Nereïs (nē're-is), a genus of dorsibranchiate annelids, consisting of worm-like animals with long segmented bodies, antennæ or feelers, eyes when distinct four in number; mouth usually with horny jaws. Some of the species are found in most seas. One species, *N. prolifĕra*, propagates by spontaneous division, the hind part of the body being gradually transformed into an additional animal.

Nereocystis (nē-re-ō-sis'tis), a seaweed of the nat. order Laminariaceæ, found on the northwestern shores of America and opposite shores of Asia, remarkable for the stems, which attain the length of 45 fathoms, swelling at the top into large cysts or bags filled with liquid; these becoming entangled form large floating islands on which sea-otters rest.

Nereus (nē'rūs), in classical mythology, an inferior divinity of the sea, the progenitor of the Nereids, a god subordinate to Poseidon (Neptune). In the ancient works of art, and also by the ancient poets, he is represented as an old man, with a wreath of sedge, sitting upon the waves with a scepter in his hand.

Nergal (ner'gal), the god of war among the ancient Babylonians.

Neri (nā'rē), ST. FILIPPO DE', the founder of the Congregation of the Oratory in Italy, was born in Florence in 1515, of a noble family; died in 1595. He early devoted himself to the study of theology and the canon law; established hospitals for the relief of pilgrims and the destitute sick, and founded the order of 'Priests of the Oratory,' which was approved by Gregory XIII in 1595. He was canonized in 1622.

Neriad (ner-i-ad'), a town of India, Kaira district, Presidency of Bombay, and a station on the Bombay, Baroda and Central India Railway, 35 miles N. W. of Baroda. It is the center of an extensive tobacco trade. Pop. 28,304.

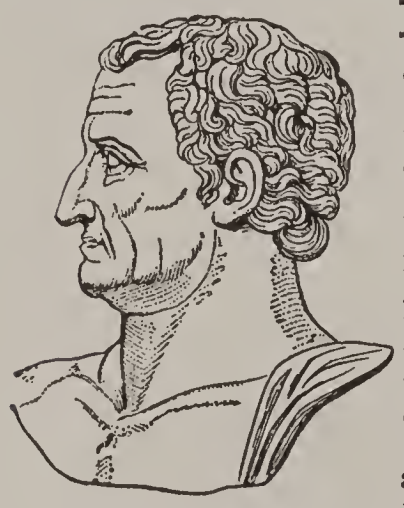
Nerium. See *Oleander*.

Nero (nē'rō), LUCIUS DOMITIUS AHENOBARBUS (after his adoption by the Emperor Claudius called *Nero Claudius Cæsar Drusus Germanicus*), Roman emperor, the son of Cneius Domitius Ahenobarbus and Agrippina, the daughter of Germanicus. He was born in 37 at Antium, and after the marriage of his mother, in third nuptials, with her uncle, the Emperor Claudius, was adopted by that prince, and married to his daughter Octavia. When Nero was about seventeen years of age his abandoned mother poisoned her husband, Claudius, and succeeded in raising her son to the throne, over whom she expected to exercise the most absolute control. Nero became Emperor in 54, and the year following disposed of the rightful heir, Britannicus, by poison. For the first few years his public conduct, under the control of Burrhus and Seneca, was unexceptionable; in private, however, he disgraced himself by the most odious vices, and his mother endeavored to retain her influence by shamefully complying with his inclinations. In 59 Nero caused this detestable woman to be murdered, and then, fearing no rival in power, gave full scope to the darkest traits of his character. In 62 he repudiated his wife Octavia. In 64

Nero.

the burning of Rome occurred, which has been charged, not without probability, upon Nero himself, who, however, accused the Christians of the act, and made it the occasion of the most dreadful cruelties towards them. His debaucheries and cruelties occasioned an almost general conspiracy against him, known as that of Piso, in 65, the discovery of which led to more tortures and bloodshed. The revolt of Vindex was also suppressed. That of Galba in 68 succeeded, and Nero escaped arrest by stabbing himself, being then in the thirty-first year of his age and the fourteenth of his reign. He was a lover of arts and letters, and possessed much taste as a poet and histrionic performer.

Nerthus (nėr'thus), an ancient German goddess, regarded as representing the earth.



Nerva—Antique Gem.

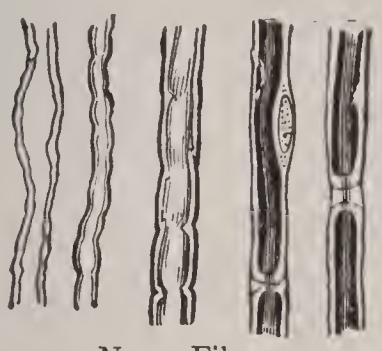
Nerva (nėr'va), the successor of Domitian, and one of the most virtuous of the Roman emperors. He was born in Umbria in 32 A.D.; died A.D. 98. He was twice consul, and was elected emperor on the death of Domitian in 96. He adopted Trajan, who succeeded him.

Nerve (nėrv), NERVOUS SYSTEM. A nerve is one of the fibers which proceed from the brain and spinal cord, or from the central ganglia of lower animals, and ramify through all parts of the body and whose function is to convey impulses resulting in sensation, motion, secretion, etc. The aggregate of these nerves, and the centers from which they proceed, forms the nervous system, the medium through which every act or detail of animal life is inaugurated and directed. The essential idea of any nervous system involves the necessary presence, firstly, of a *nerve center* or *centers*, which generate the nervous force or impulse; secondly, of conducting fibers or cords, the *nerves;* and thirdly, of an *organ*, *part*, or *structure* to which the impulse or impression may be conveyed. The nerve centers of man and vertebrates generally are disposed so as to form two chief sets, which are to be regarded as essentially distinct. The brain and spinal marrow together (see *Brain*) constitute the first of these centers, and are collectively included under the name *cerebro-spinal system* or *axis*. The second system is the *sympathetic* or *ganglionic*. From each of these systems nerve cords are given off—the *cerebral* and *spinal* nerves from the former; and the so-called *sympathetic* fibers from the latter. The brain and spinal cord are contained within the continuous bony case and canal formed by the skull and spinal column; while the chief masses of the sympathetic system form an irregularly disposed chain, lying in front of the spine, and contained within the cavities of the thorax or chest and abdomen. The general functions of the cerebro-spinal system are those concerned with volition and muscular movements, with the control of the senses, and in higher forms with the operations of the mind. The nerves of the sympathetic system in chief are distributed to the viscera, such as the heart, stomach, intestines, blood-vessels, etc.; and the operation of this system is in greater part of the involuntary kind, and without the influence or command of the will. The cranial or cerebral nerves pass from the brain through different openings in the skull, and are all in pairs, the first pair being the *olfactory* nerves or nerves of smell; the second, the *optic* nerves, or nerves of sight; while others have to do with hearing, taste, general sensibility, and muscular motion. The spinal nerves, after issuing from their openings in the vertebral column, split into two divisions, one of which proceeds to supply parts behind the spine, while the other passes towards the front. The first eight spinal nerves on each side are called *cervical*, the next twelve are *dorsal*, the next five *lumbar*, then five *sacral*, and one *coccygeal*.

All nervous structures consist of two elements, *nerve cells* and *nerve fibers*. The cells and fibers are combined and associated in various ways, and are imbedded in and supported by fine connective tissue so as to form a connected structure. The cells vary in size from $\frac{1}{3000}$ to $\frac{1}{400}$ of an inch, and consist of masses of protoplasm containing a nucleus and nucleolus. Processes or poles pass from the cell, branching outward. Nerve fibers are of a glossy transparency and of a tubular form. They consist of a rod passing down the center, called the axis-cylinder, which is surrounded on all sides by a white substance, the whole being inclosed in a delicate sheath (*neurilemma*). The axis-cylinder is a continuation of the nerve cell process, and acts in an analogous manner to an electric conductor. The nerve fibers may exhibit a diameter so great as the $\frac{1}{1500}$th of an inch; but their average breadth may be stated to vary from $\frac{1}{2000}$th to the $\frac{1}{3000}$th

of an inch. The largest fibers are those of the nerve trunks themselves; and they diminish in size in the neighborhood of the nerve centers—brain and spinal marrow—and as they approach to the periphery of the body or to their ultimate terminations. The nerve fibers of the brain and spinal marrow do not exhibit a limiting membrane; and in the gray matter of the brain and cord the fibers are of exceedingly small size, not exceeding the $\frac{1}{10000}$th or $\frac{1}{14000}$th of an inch in diameter.

The general functions of nerve fibers may be briefly considered under two aspects. The fibers may convey impressions *from* the brain or nerve centers *to* their peripheral extremities, or to the parts to which they are distributed. Or secondly, they may transmit impressions *from* the periphery, or from the parts they supply, *to* their centers. A double series of nerve fibers, each set subserving one or other of the preceding functions, exists in the cerebro-spinal as well as in the sympathetic nervous system. These series are therefore known as *sensory*, *efferent*, or *centripetal* nerves, when they transmit impressions from their peripheral extremities to the brain or centers; and as *motor*, *efferent*, or *centrifugal* nerves, when they carry impressions from the centers to their peripheral terminations. *Stimuli* of various kinds applied to the nerves arouse the so-called *excitability* of the fibers, and through this property nerves convey impressions thus made upon them. Impressions have been calculated to pass along a nerve at the rate of about 200 feet per second. Nerve fibers in any case —motor or sensory—can carry one kind of impulse only, corresponding to the kind of fiber. In certain nerves the impulses or impressions are of a limited or specialized kind, as in the nerves of special sense—for example, sight, hearing, smell—whereby certain distinct sensations, of light, sound, or odors, are produced. And such nerves, therefore, respond only to stimuli of a special kind. The various nerve centers of the body which originate, or at any rate direct and dispose, the nerve force, may be viewed as simply ganglia, or as collections of ganglia, or nervous masses. The brain itself falls under this latter division. The general functional relations existing between the nerve centers and the nerves may be simply illustrated by the phenomena comprehended under the



Nerve Fibers.

Main Nerves of the Human Body.

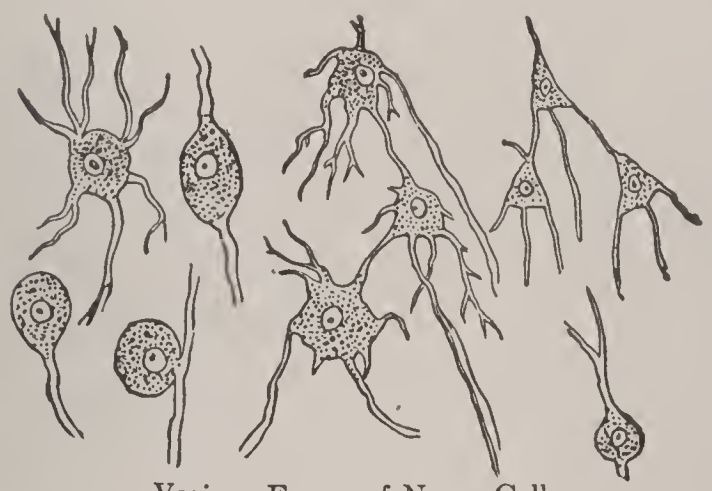
name of *reflex action*. When a peripheral nerve fiber is irritated a sensory or centripetal impression is conveyed towards the nerve center. Arriving at the center the impression is converted into a motor or centrifugal one, and travels along the motor nerve fibers, to excite, it may be, a muscle or other part to action. The general functional relation of the nervous system may be summarized by stating that its functions comprehend the reception and distribution of impressions; that these impressions originate either from influences acting on the periphery, or from the nerve centers, brain, or mind; that these impressions respectively influence or stimulate the mind or nerve centers, and the muscles or secreting structures; and lastly, that all nervous phenomena are exerted through, or accompanied by, nervous action, and that this latter is, so far as physiology has yet been able to determine, of a uniform and similar kind. See also *Eye*, *Ear*, *Nose*, etc.

The Invertebrata possess no such specialization of the nervous centers as is

BURNING OF ROME UNDER NERO

Nero, enjoying the calamity which he had occasioned, amused himself with singing to his lyre the destruction of ancient Troy.

seen in Vertebrates, in which the brain and spinal cord are inclosed within their bony case and canal, and thus shut off from the general cavity of the body. The great and distinctive feature between the nervous system of Vertebrata and that of



Various Forms of Nerve Cells.

lower forms consists in the partial or complete absence of a defined or chief nervous center, through which consciousness may intervene to render the being intelligent, and aware of the nature of the acts it performs.

Nervii (nėr'vi-ī), an ancient people of Gallia Belgica, famous for the stand they made against Cæsar's advance in B.C. 57 and 54. They submitted to the Romans in B.C. 53. Their territory was coextensive with the old diocese of Cambrai.

Nervous Diseases (nė'r'vus diz-ē'-zuz), are diseases due either to actual changes in the structure of nerve fibers or nerve centers, or to some irregularity of nerve function without actual structural change. Thus nervous diseases may be due to inflammation or degeneration of nerve substance; to the pressure on some part of the nervous system of tumors, effused blood, or other fluid; to the death of some part by the cutting off of its blood supply, etc.; or may be the result of lowered nervous action as a part of general bad health.

Nervous System. See *Nerve.*

Nervures (nėr'vūrz), in entomology, the corneous tubes which form prolongations of the tracheæ or air-vessels of insects, and which help to expand the wing and keep it tense. The term is applied in botany to the veins or nerves of a leaf.

Ness, a cape or headland; in Britain a frequent element in the names of points of land projecting into the sea. It is of Norse origin.

Ness, Loch, a lake of Scotland, in Inverness-shire, on the line of the Caledonian Canal. It is long and narrow, stretching S. S. W. and N. N. E. about 22 miles, with a breadth varying from 1½ to 2 miles. Except at the extremities, where it shallows, its depth is from 100 to 130 fathoms. The outlet of the lake is by the river Ness into the Moray Frith.

Nest, the abode or habitation, varying greatly in form, materials and situation, constructed by birds, chiefly for the purposes of incubation and the rearing of the young. The nests of birds are of the most diverse character, some birds making little or no nest, while others construct receptacles for the eggs requiring a great amount of skill and industry. The materials used are also extremely various, being such as mud or clay, twigs or branches, leaves, grass, moss, wool, feathers, etc. Some birds, for the sake of protection, excavate burrows in banks or sandy cliffs in which to make their nests. Many mammals also are nest-builders, notably mice, moles, dormice, squirrels, foxes, weasels, badgers, rabbits, etc.; and nests are also constructed by certain fishes, reptiles, crustaceans, insects, etc. See *Birds' Nests, Edible.*

Nestor (nes'tur), one of the Greek heroes at Troy, son of Neleus, King of Pylos. He took part in the hunting of the Calydonian boar, and in the Argonautic expedition. He is noted as the wisest adviser of the chiefs before Troy, after the fall of which he retired to Pylos, where he lived to a great age.

Nestor, a Russian historian, born about 1056, was a monk at Kiev, and died after 1116. He wrote a chronicle in his vernacular tongue, which has been the foundation of Slavonic history.

Nestorians (nes-tō'ri-anz), a Christian sect of Western Asia, named from their founder Nestorius (see next article), formerly of greater importance than they are at present. One portion of them are united with the Roman Catholic Church though using the Greek ritual. They are commonly known as Chaldæan Christians, and have a patriarch, residing at Diarbekir. The larger body of them remain as a distinct sect, in Mesopotamia, Syria, Persia, etc. They recognize only three sacraments, baptism, the Lord's supper, and ordination; and their priests are allowed to marry. There is a Nestorian body in India called Christians of St. Thomas.

Nestorius (nes-tō'ri-us), heresiarch, was presbyter at Antioch

and bishop of Constantinople from A.D. 428 to 431. He incurred the charge of heresy by maintaining that in the person of Christ the two natures were not so united as to form but one person. Cyril of Alexandria, at the council of Ephesus in 431, procured the condemnation of the doctrine taught by Nestorius and the deposition of the patriarch. He was banished to the deserts of Egypt, where he suffered much and died (440). Numerous extracts from several of his works, entire epistles, and some sermons are extant. His followers, called Nestorians, were persecuted by several Greek emperors in succession.

Net, a term applied to that which remains of a weight, quantity, etc., after making certain deductions. Thus *net weight* is the weight of merchandise after allowance has been made for casks, bags, or any inclosing material.

Net, an open fabric made of thread, twine, or cord, woven into meshes of fixed dimensions, firmly knotted at the intersections. Nets are used for a great variety of purposes, as for protecting fruit trees, for collecting insects, for hammocks, screens, etc., but chiefly for hunting and fishing. The chief kinds of nets used in fishing are the trawl, the drift, the seine, the kettle or weir, and the trammel or set nets. The trawl is a triangular bag with an arrangement for keeping its mouth open, drawn along the bottom of the water. The drift and seine nets are very long in proportion to their breadth, and differ from one another only in the manner in which they are employed. The seine has a line of corks along one of its long borders, and a line of leaden weights along the other, so that when thrown into the water it assumes a perpendicular position. It is used near the shore, being dragged to land with any fish it may inclose, by ropes fastened to the ends. The drift-net is not loaded with lead, but floats in the water, and is used especially in herring fishing, the fishes as they drive against it becoming caught by the gills. Kettle and weir nets are structures fixed on stakes placed among the coast between high and low water. Trammel or set nets are also fixed between stays, but act like drift-nets. Formerly all nets were made by hand, but since 1820, when James Paterson established a machine-net factory at Musselburgh, hand-made nets have been superseded. Wire nets are used for garden purposes, for hen coops, etc.

Netherlands (neth'ér-landz), THE, or HOLLAND, in Dutch NEDERLAND, or KONINKRIJK DER NEDERLANDEN, a kingdom of Europe which lies on the North Sea, N. of Belgium and W. of part of Northern Germany. Its area is 12,648 square miles; its population is 5,898,429. The country is divided into eleven provinces: North Brabant, Gelderland, South Holland, North Holland, Zeeland, Utrecht, Friesland, Overijssel, Groningen, Drenthe and Limburg. The king is also sovereign (grand-duke) of the Grand-duchy of Luxemburg. In addition to her European territories Holland possesses extensive colonies and dependencies in the Asiatic archipelago and America; including Java, Sumatra, great part of Borneo, Celebes, part of New Guinea, Surinam or Dutch Guiana, the West Indian islands of Curaçao, Saba, St. Eustatius, etc. Estimated colonial pop. 41,347,182.

General Features.—The Netherlands (or Low Countries, as the name implies, formerly including Holland and Belgium) form the most characteristic portion of the great plain of northern and western Europe. It is the lowest part of this immense level, some portions of it being 16 to 20 feet below the surface of the sea, and nearly all parts too low for natural drainage. The coast line is very irregular, being marked by the great inlet of the Zuider Zee, as well as by various others, and fringed by numerous islands. In great part the coast is so low that were it not for massive sea-dykes large areas would be inundated and lost to the inhabitants. In the interior also dykes are a common feature, being built to protect portions of land from the lakes or rivers, or to enable swampy pieces of land to be reclaimed by draining, the water being commonly pumped up by wind-mills. These inclosed lands are called *polders*, and by the formation of the polders the available area of the country is being constantly increased, lakes and marshes being converted into fertile fields, and considerable areas being even rescued from the sea. One of these reclamations was the Lake of Haarlem, the drainage of which, yielding more than 40,000 acres of good land now inhabited by some 12,000 persons, begun in 1839, was finished in 1852. Almost the only heights are the sand hills, about 100 to 180 feet high, forming a broad sterile band along the coast of South and North Holland; and a chain of low hills, of similar origin perhaps, southeast of the Zuider Zee. In the same line with the sand hills, extending past the mouth of the Zuider Zee, runs a chain of islands, namely, Texel, Vlieland, Schelling, Ameland, etc., which seem to indicate the original line of the coast before the ocean broke in upon the low lands. The coast

NETHERLANDS AND BELGIUM

SCALE OF MILES
0 10 20 30 40 50

Railroads, ——
Canals, — — —

Size of type indicates relative importance of places.

NETHERLANDS

PROVINCES

1 Drenthe .....J 2
2 Friesland ...G 1
3 Gelderland..H 3
4 Groningen ..J 1
5 Limburg....G 5
6 N. Brabant . F 4
7 N. Holland..E 3
8 Overyssel ...J 3
9 S. Holland ..E 4
10 Utrecht .....F 3
11 Zeeland .....C 5

BELGIUM

PROVINCES

1 Antwerp....E 5
2 Brabant.....E 6
3 E. Flanders .C 6
4 Hainaut ....C 6
5 Liege .....G 6
6 Limburg....F 5
7 Luxemburg F 8
8 Namur.....E 7
9 W. Flanders B 6

C.S. HAMMOND & CO N.Y.

of Friesland, opposite to these islands, depends for its security altogether on artificial embankments. The highest elevation, 656 feet, is in the extreme southeast. The general aspect of the country is flat, tame, and uninteresting, and about a fifth of the whole surface consists of marsh, sand, heath, or other unproductive land.

Rivers and Canals.—The chief rivers of the Netherlands are the Rhine, Maas (or Meuse), Scheldt and Ijssel. The Rhine is above half a mile wide where it enters the Netherlands; it soon divides, the south and principal arm taking the name of Waal and uniting with the Maas, while the north arm, communicating with the Ijssel, takes the name of Leck; a branch from it named the Kromme (crooked) Rhein, winds by Utrecht to the Zuider Zee, while another very diminished stream called the Old Rhine flows from Utrecht by Leyden to the sea at Katwijk. The Maas, entering the Dutch Netherlands from Belgium, receives the Roer; of the Scheldt only the mouths, the east and the west, or Old Scheldt, lie within the Dutch boundary. The Ijssel, flowing from Germany, enters the Zuider Zee. The navigable canals are collectively more important than the rivers, on which indeed they depend, but they are so numerous as to defy detailed description. The chief are the North Holland Canal, between Amsterdam and the Helder, length 46 miles; and the more important ship canal, 15 miles long, 26 feet deep and 197 wide, from the North Sea to Amsterdam, and connected by locks with the Zuider Zee. (See *Amsterdam.*) Lakes are also very numerous.

Climate, Agriculture, etc.—The climate of the Netherlands is humid, changeable and disagreeable. The mean temperature is not lower than in like latitudes in the British Islands, and the quantity of rain (26 inches) is somewhat less; but the winter is much more severe. As regards rural industries, gardening and agriculture have attained a high degree of perfection. Yet the latter holds a subordinate place in rural industry. Wheat, of excellent quality, is grown only in favored portions of the south provinces. Rye, oats and buckwheat with horse-beans, beet, madder and chicory are more common crops; and tobacco is cultivated in the provinces of Gelderland, South Holland and Utrecht; flax in North Brabant, South and North Holland, Friesland and Zeeland; and hemp, sugar-beet, oil-seeds and hops in various parts of the kingdom. Culinary vegetables are cultivated on a large scale, not merely for the sake of supplying the internal demand, but also for the exportation of the seeds, which form an important article of Dutch commerce. But it is in stock (cattle, horses, sheep, swine, goats), and dairy produce in particular, that the rural industry of the Netherlands shows its strength.

Commerce, Manufactures, etc.—The commerce of the country was at one time the most important in the world, and is even yet of great importance and activity. The external commerce is chiefly carried on with Great Britain, Germany, Belgium, and the Dutch colonies in the East. The imports amount to about $1,000,000,000, the exports to $900,000,000. A considerable portion of the trade is transit, passing through Holland to Germany and other interior countries. The foreign trade centers chiefly in Amsterdam and Rotterdam. The industrial occupations are varied. Shipbuilding and subsidiary trades are among the chief. Of textile manufactures that of linen is the most important; but silks and velvets, as well as woolens and cottons, are produced in considerable quantity. Pigments, brandy, gin, paper, glass, earthenware, etc., are among the more important products. Large numbers of the seaboard population are employed in the deep-sea fisheries. The chief money unit is the florin or guilder=40 cents.

People, Institutions, etc.—The stock to which the people belong is the Teutonic, the great majority of the inhabitants being descendants of the old Batavians. They comprise over 70 per cent. of the population, and are chiefly settled in the provinces of North and South Holland, Zeeland, Utrecht and Gelderland. The Flemings of North Brabant and Limburg, and the Frisians, inhabiting Friesland, Groningen, Drenthe and Overijssel, form the other groups. The majority of the people belong to the Dutch Reformed Church (a Presbyterian body); the remainder being Roman Catholics, Old Catholics, Jews, etc. All religious bodies are on a perfect equality. The government is a constitutional monarchy, the executive being vested in the monarch, and the legislative authority in the States General, sitting in two chambers. The upper chamber, fifty in number, is elected by the provincial councils or assemblies of the eleven provinces; the lower chamber, 100 in number, is elected directly, the electors being all males of twenty-three years of age taxed at a certain figure. The members of the lower house are paid. Elementary schools are everywhere established, and are partly supported by the state, but education is not compulsory. Higher class

schools are in all the chief towns; while there are state universities, namely, at Leyden, Utrecht and Groningen, and the municipal university at Amsterdam. The commercial capital of the country is Amsterdam, but the seat of government and residence of the sovereign is The Hague.

Language and Literature.—The literary language of the Kingdom of the Netherlands is in English called *Dutch*, but by the people themselves is called *Hollandsch* or *Nederduitsch*, that is, Low Dutch. This name it receives in opposition to the *Hochdeutsch* or High Dutch, the literary language of modern Germany. Closely allied to the Dutch is the Flemish language (which see). Both languages belong to the Low German group of the Teutonic or Germanic branch of the Indo-European family of languages. The two languages, or rather dialects, are in fact in their early history identical. What may be strictly called Dutch literature, as distinguished from Flemish, dates from the latter quarter of the sixteenth century. The chief names of this period are those of Coornhert, Von Marnix, Spiegel and Visscher, who did much to polish and regulate the language, and to produce correct models both of prose and verse. Pieter Corneliszoon Hooft (1581-1647) brought the prose style to a high degree of excellence; and Joost van den Vondel (1587-1679), the greatest of Dutch dramatists, performed the same service for the language of poetry. Jacob Cats, familiarly known in Holland as 'Father Cats' (1577-1660), on the other hand, confined himself to the sphere of every-day life. He was distinctively the poet of the people, and his writings are still popular. Among other leading names in pure literature are those of Constantyn Huygens (1596-1686), a satirist, epigrammist and didactic poet; Jacob van Westerbaan (died 1670) and Jan van Hemskork (died 1656), both erotic poets; and Dirk Kamphuisen (died 1626), a celebrated hymn writer. Among dramatists were Brandt (died 1685), who was also an historian and epigrammatist; Oudaan (died 1692), a political writer and lyrist; and Antonides van der Goes (died 1684)), celebrated also as a lyrist. The principal writer of comedies was Bredero (1585-1618). Dutch poetry declined towards the end of the seventeenth century, partly through French influence, but a revival set in with Jacob Bellamy (1757-86). Willem Bilderdijk (1756-1831) shone in all departments of poetry. J. F. Helmers (1767-1813) won great applause by the descriptive poem *De Hollandsche Natie*. Hendrik Tollens (1780-1856) was as a lyrist the avowed favorite of his country, and his *Overwintering der Hollanders op Nova Zembla* is regarded as the best descriptive poem in the Dutch language. An important service was rendered to the literature of his country by Jacob van Lennep (1802-68), who, incited by the example of Scott and Byron, introduced romanticism, and successfully repressed French classicism by his masterly treatment of native tales and historical subjects in narrative poems. The novelists who rank next to Van Lennep are Oltmans, Mrs. Bosboom-Toussaint, and Douwes Dekker (Multatuli). The list of recent Dutch prose writers also includes Schimmel, N. Beets, W. A. van Rees, Weitzel, Lange, J. ten Brink, Opzoomer, Limburg-Brouwer, and the historians Fruin (called the Dutch Motley) and Hofdijk. Dutch names famous in classical learning include those of Erasmus, Lipsius, Grotius, Gronovius, etc.; in science, Huygens, Leeuwenhoek, etc.; in philosophy, Spinoza; and in medicine, Boerhaave.

History.—The southern portion of the Low Countries belonged at the beginning of the Christian era to Belgic Gaul. (See *Gaul.*) The northern portion, inhabited by the Batavians and Frisians (see those articles), formed part of Germany. The southern portion as far as the Rhine was held by Rome up to A.D. 400, after which it came under the rule of the Franks, as did also subsequently the rest of the country. In the eleventh century the territory comprised in the present kingdoms of Belgium and the Netherlands formed a number of counties, marquisates, and duchies corresponding more or less with the modern provinces. By the latter part of the fifteenth century all these had been acquired by the Duke of Burgundy, and passed to the house of Hapsburg on the marriage of the daughter of Charles the Bold of Burgundy to the son of the Emperor Frederick III. On the abdication of Charles V in 1556 they passed to his son Philip II of Spain. In consequence of religious persecution in 1576 Holland and Zeeland openly rebelled, and in 1579 the five northern provinces—Holland, Zeeland, Utrecht, Guelders and Friesland—concluded the celebrated Union of Utrecht, by which they declared themselves independent of Spain. They were joined in 1580 by Overijssel, and in 1594 by Groningen. After the assassination of William of Orange, July 10, 1584, Maurice became stadtholder (governor). His victories at Nieuport and in Brabant, the bold and victorious exploits of the Dutch admirals against the navy of Philip II, the wars of France and England against Spain, and the apathy of Philip II, caused

in 1609 the Peace of Antwerp. But Holland had yet to take part in the Thirty Years' war before its independence, now recognized by all the powers except Spain, was fully secured by the Peace of Westphalia. In the middle of the seventeenth century the United Netherlands were the first commercial state and the first maritime power in the world, and for a long time maintained the dominion of the sea. The southern provinces alternated between the rule of Spain and Austria till 1797, when they came under the power of the French Republic. In 1806 Louis Napoleon became king of Holland, but in 1810 it was incorporated with the French Empire. In 1814 all the provinces both of Holland and Belgium were united by the Treaty of Paris to form the kingdom of the Netherlands. This arrangement lasted till 1830, when the southern provinces broke away and formed the kingdom of Belgium. King Willem I attempted to reduce the revolted provinces by force; but the great powers intervened, and finally matters were adjusted between the two countries in 1839. (See *Belgium.*) The king abdicated in 1840, and was succeeded by his son Willem II (1840-49), he being again succeeded by his son Willem III, who was succeeded in 1890 by his daughter Wilhelmina. See *Wilhelmina.*

Nethersole (ne'ther-sōl), Olga, actress, born in Kensington, England, in 1870. She first appeared in *Harvest* in 1887. She subsequently became a favorite in England and Australia, and made several visits to the United States, the first in 1894, when she appeared in New York in *Camille.* In subsequent visits she appeared in the roles of *Denise, Juliet, Carmen,* etc.

Netley (net'li), a village of England, in Hampton, 6 miles S. E. of Southampton, on Southampton Water. The Royal Victoria Hospital here was erected in 1857 for the reception of invalids from the troops on foreign service, and from the troops quartered in the military district in the neighborhood. The accommodation is for 1000 patients, but it is capable of being increased. Candidates for medical appointments in the army attend the medical school attached to the hospital, and the female army nurses have also their headquarters here.

Netting (net'ing), a net of small ropes to be stretched along the upper part of a ship's quarter to contain hammocks. Netting also used to be extended along a ship's gunwale to prevent the enemy from boarding.

Nettle (net'l), a genus of plants (*Urtica*) belonging to the nat. order Urticaceæ, and consisting chiefly of neglected weeds, having opposite or alternate leaves, and inconspicuous flowers, which are disposed in axillary racemes. The species are mostly herbaceous, and are usually covered with extremely fine, sharp, tubular hairs, placed upon minute vesicles filled with an acrid and caustic fluid, which by pressure is injected into the wounds caused by the sharp-pointed hairs. Hence arises the well-known stinging sensation when these plants are incautiously handled. Nettles yield a tough fiber which may be used as a substitute for hemp. Nettle-porridge and nettle-broth are dishes made from young and tender nettles cut in March or April. Many species of nettles are known, some of which are common in the United States.

Nettle-rash, or Urticaria (Latin, *urtīca,* a nettle), a common disease of the skin, an eruption closely resembling nettle-stings both as to appearance and as to the sensations it originates. It consists of small wheals, either red or white, sometimes both, having the centers white and the margins red. The disease may be either acute or chronic. When it is acute generally more or less of fever accompanies it. In almost all cases it arises from a disordered condition of the digestive organs, produced either by indigestible food, or in some persons by particular kinds of food which others eat with complete impunity.

Nettle-tree (*Celtis*), nat. order Urticaceæ, a deciduous tree, with simple and generally serrated leaves, much resembling those of the common nettle, but not stinging. It has a sweet fleshy drupaceous fruit. The common or European nettle-tree (*C. austrālis*) grows to the height of 30 or 40 feet, and is frequently planted for ornament in the south of France and north of Italy. The wood is useful for various purposes. *C. occidentālis,* sometimes called the sugar-berry, is a much larger tree, often attaining a height of from 60 to 80 feet. It is a native of North America from Canada to Carolina. A variety, *C. crassifolia,* is often called hackberry. See *Hackberry.*

Neu-Brandenburg. See *Brandenburg (New).*

Neuburg (noi'burh), a town of Bavaria, on the Danube, 45 miles N. N. W. of Munich. It is a place of great antiquity, and for three centuries (1503-1802) was the capital of the independent duchy of Pfalz-Neuburg. The old ducal residence contains an interesting collection of portraits and armor. Pop. (1905) 8532.

Neufahrwasser (noi'fär-vâs-ėr), a seaport forming a

sort of suburb of Dantzig, from which it is about 3½ miles distant. (See *Dantzig.*) Pop. 8512.

Neufchatel (neu-shä-tel), NEUCHÂTEL (in German *Neuenburg*), a Swiss canton, bounded by France, Vaud, the Lake of Neufchâtel, and Bern, with an area of 312 sq. miles. Neufchâtel was an independent principality as early as 1034. After various vicissitudes it came into the hands of the King of Prussia, as heir of the house of Orange. In 1814 it was received into the Swiss Confederacy, and was the only canton with a monarchical government, which it preserved till 1848. After threatened war in May, 1857, the King of Prussia renounced all his rights in Neufchâtel. Several ridges of the Jura run through the country. The Lake of Neufchâtel, 24 miles long by 8 broad, communicates through the Aar with the Rhine. Grazing and dairy-farming are extensively carried on in the canton; wine, fruits, hemp and flax are produced. The chief manufactures are lace, cotton, watches and clocks (specially at Chaux de Fonds and Locle). The religion is Protestant. The language is French, but German is also spoken. Pop. 125,804.—The capital, which has the same name, lies 24 miles west of Bern, on a steep slope above the northwestern shore of Lake Neufchâtel. It has a castle, formerly the residence of the princes of Neufchâtel and now occupied by the government offices; an old Gothic church of the twelfth century; a gymnasium or college, containing a valuable natural history collection founded by Professor Agassiz, a native of the town, etc. It has various manufactures and an extensive trade. Pop. 20,843.

Neuhaus (noi'hous), a town of Bohemia, 26 miles northeast of Budweis, on the Nezarka. It has a grand castle of the Czerny family. Pop. 9316.

Neuhäusel (noi'hoi-zl; also ERSEK-UJVAR), a town of Hungary, on the river Neutra. It was formerly strongly fortified, and played an important part in the Turkish wars, but its fortifications were demolished in 1724. It is now merely a market town. Pop. 13,385.

Neuilly (*neu*-yē), a town of France, practically a suburb of Paris, on the right bank of the Seine, here crossed by Perronet's magnificent bridge. Pop. 39,222.

Neumünster (noi'mün-stėr), a town of Prussia, province of Schleswig-Holstein, 17 miles S. S. W. of Kiel. It is the center of the railway system of Holstein, and the second industrial town in the province, with cloth factories, etc., and a brisk trade. Pop. 31,347.

Neunkirchen (noin'kir*h*-ėn), or OBER-NEUNKIRCHEN, a town of Prussia, in the district of Treves, on the Blies, 12 miles northwest of Saarbrücken. It lies in a great coal-basin, in which about 4,000,000 tons of coal are raised annually, and has a large iron foundry employing about 3000 hands. Pop. 32,358.—A town in Lower Austria, lying 10 miles southwest of Wiener Neustadt, and with textile and other industries. Pop. 10,831.

Neuralgia (nū-ral'ji-a), the name given to that species of morbid pains which occur only in the course of one or more distinct nerves, and by this locality are distinguished from other pains. In neuralgia of the fifth nerve the pain is in one half of the face, and if the central branch is affected the pain is confined to the upper jaw; neuralgia of the chief nerve of the thigh (*sciatic nerve*) extends along the buttocks and back of the thigh down to the knee, and is called *sciatica*. It also affects the front, back, and outside of the leg, and the whole foot except its inner border; while neuralgia of the intercostal nerves manifests itself in a belt or circle of pain around the breast. The presence of neuralgia almost invariably indicates a weak state of the general system. The most common and best ascertained of the neuralgias are those of the nerves of the skin (*dermalgia*); but nerve pains occur also in other parts, as in the joints, muscles, and in the bowels (*enteralgia*). Many of the internal parts may be the seat of similar local affections; such, for example, are nervous affections of the heart and respiratory organs, which, however, do not usually manifest themselves by acute pain, but by special symptoms. The primary causes of the injury to the nerve producing neuralgia may be very various. It may be inflammation of the nerve itself, a swelling in or upon it, irritation of it produced by an ulcer or suppuration or swelling of the adjacent parts, especially the cavities of the bones, etc. Thin blooded persons and those of weak nerves are most liable to be affected by neuralgia, which varies much both in degree and duration. It is often chronic, and often suddenly occurs during the progress of other acute diseases, as in typhus or intermitting fevers. The treatment also, of course, varies with the nature of the different cases, some admitting of easy cure by the administration of nourishing food, and by the use of iron and quinine, and other tonics, while for others the aid of surgery has to be called in.

Neurapophyses (nū-ra-pof'i-ses), or NEURAL ARCHES, the name applied to the upper or superior arches which spring from the body of the typical vertebra, or segment of the vertebrate spine, and which by their union form a canal—the 'neural canal'—inclosing the spinal marrow.

Neurin, NEURINE (nū'rin), the nitrogenized substance of nerve fiber and cells, consisting chiefly of albumen and a peculiar fatty matter, associated with phosphorus.

Neuritis (nū-rī'tis), inflammation of a nerve. Tenderness in the course of the nerve and pain recurring in paroxysms are among the symptoms. Paralysis may occur as a result, and in the case of a special nerve of sense loss of the particular sense. Neuritis of the optic nerve, for instance, is a frequent cause of blindness.

Neuroptera (nū-rop'tėr-a), an order of insects which undergo an incomplete metamorphosis, distinguished by the possession of four well-developed membranous wings, which are generally of equal or nearly equal size. The name Neuroptera ('nerve-winged') is applied to the group in allusion to the large size of the nervures or supporting 'ribs' of the wings, which are very conspicuous and give to the wings a reticulated or network-like appearance. The mouth is generally masticatory, the head large and distinctly separable from the thorax, the antennæ generally slender. The tarsi possess from two to five joints. No sting exists. In some Neuroptera the metamorphosis may approach very nearly to the holometabolic or 'complete' variety. In general the larvæ are aquatic, the pupa in the majority of cases closely resembling the perfect insect. The chief families included in the order comprise the Libellulidæ or dragon flies; the caddis flies (Phryganeidæ); the may-fly family (Ephemeridæ); the Myrmeleontidæ, or 'ant-lions'; the Hemerobiidæ, or 'lace-winged flies'; and the Termitidæ, represented by the celebrated 'white-ants' or termites of tropical regions. See the different articles.

Neurosis (nū-rō'sis; Gr. *neuron*, a nerve), a name common to diseases of the nervous system unaccompanied by any discoverable alteration in structure, that is to say, *functional* diseases of the nervous system. Hysteria, for example, is a neurosis; catalepsy, some forms of mental disease, such as melancholia, various forms of neuralgia and spasm, are called neuroses.

Neurotic (nū-rot'ik), a term introduced into medicine to indicate some relationship to the nervous system. Thus a neurotic disease is a nervous disease. So, medicines that affect the nervous system, as opium, strychnine, etc., are called *neurotics*.

Neusatz (noi'zâts), a town of Hungary, on the Danube, opposite Peterwardein, with which it communicates by a bridge of boats. Pop. 29,296.

Neusiedler See (noi'zēd-lėr zā), or Lake Neusiedl, a lake in the extreme west of Hungary, 23 miles long and 5 broad. It is salt and shallow throughout; greatest depth seldom exceeding 15 feet; on the east side it is lost in the great morass of Hansag. The water has several times disappeared from it entirely. The last occasion was between 1865 and 1870, when crops were grown on its bed.

Neusohl (noi'zōl), a town of Hungary, at the confluence of the Gran and the Bistritz, 79 miles north of Pesth. It is an important mining center, copper, iron, lead and silver being wrought. Pop. 9264.

Neuss (nois), a town in Rhenish Prussia, 21 miles northwest of Cologne, on the Erft, near its junction with the Rhine. The church of St. Quirinus (1209) is a fine Romanesque building. Neuss has various flourishing industries, including woolen and cotton machinery and metal goods, and an active trade especially in grain. Pop. 30,494.

Neustadt (noi'stât; 'new town'), the name of numerous places in Germany.—1. NEUSTADT-AN-DER-HARDT, a town in the Palatinate of Bavaria, 14 miles east of Spires, with manufactures of cloth, paper, etc. Pop. 18,576.—2. NEUSTADT, or PRUDNIK, a walled town in Prussian Silesia, 29 miles s. s. w. of Oppeln, with manufactures of damasks, table linen, etc. Pop. 20,187.—3. NEUSTADT-EBERSWALDE, now officially named Eberswalde, a town in Prussia, 28 miles northeast of Berlin. Pop. 21,614.

Neu-Stettin (noi-stet-tēn'), a town of Prussia, in the province of Pomerania, on a small lake, 90 miles northeast of Stettin. It was founded in 1312, and is built after the pattern of Stettin; has manufactures of machinery, etc. Pop. 10,785.

Neu-Strelitz (noi-strā'litz), the capital of the Grand-duchy of Mecklenburg-Strelitz, between Lakes Zierk and Glambeck, 57 miles north of Berlin. It is regularly built in the form of a star, the eight rays of which converge on a spacious market-place, and has a large and handsome ducal palace, partly in the Doric and partly

in the Italian styles, with a library of 80,000 volumes and some good collections. Pop. 11,656.

Neustria (nūs'tri-a), in the geography of the middle ages, the western kingdom of the Franks, in the north of France, so called in opposition to *Austrasia* (Austria, Oestreich), the eastern kingdom of the same. The term is derived from the negative particle *ne* (not), and *Austria*. On the death of Clovis (511) his sons divided his territories into two parts, which received these names. Neustria lay between the Meuse, the Loire, and the ocean. See *France* (*History*).

Neuter (nū'tėr), in zoölogy, a term applied to indicate those insect forms—represented chiefly among the ants, bees and wasps—in which the characteristics of sex are either present in a rudimentary condition or may not be developed at all. Thus among the ants the community consists of males, females, and neuters, or 'workers' as they are also termed. These ant-neuters are simply (sexually) undeveloped females, and upon these forms the performance of all the laborious duties of the ant colony devolves. In the bees the neuters, or workers, are similarly sterile females. The differences between the fertile females and neuters—both of which are developed from fertilized ova—appear to be produced through differences in the food upon which the respective larvæ are fed, and through similar and surrounding circumstances which affect the nutritive development of the larvæ. Plenty of food is thus said to produce females, and a scantier or different dietary males or neuters. See *Parthenogenesis*, *Ant*, *Bee*, *Wasp*.

Neuter, in grammar. See *Gender* and *Verb*.

Neutitschein (noi'tit-shīn), a town of Austria, in Moravia, 26 miles east of Olmütz, on the river Titsch. It lies in a fertile valley peopled by German settlers, and has manufactures of woolen, hats, etc. Pop. 11,891.

Neutra (nū'tra), a town in Hungary, on the river of the same name, 70 miles northwest of Budapest. Part of the town, including the cathedral and bishop's palace, is picturesquely situated on a height surrounded with ramparts and bastions. Pop. 15,169.

Neutrality (nū-tral'i-ti; Latin, *neuter*, neither) means, in the law of nations, that state of a nation in which it does not take part, directly or indirectly, in a war between other nations. To maintain itself in this state a nation is often obliged to assume a threatening position to be able to repel, in case of necessity, every aggression on the part of either of the belligerents. Such neutrality is termed an *armed neutrality*. In maritime wars the treatment of effects of the enemy on board neutral vessels, or neutral effects on board a hostile vessel, gives rise to very important questions. In former times the principle was pretty generally admitted, that the ownership of the goods on board of the vessels was the only point to be considered, and not the property of the vessels themselves. The belligerents, therefore, seized merchandise belonging to the enemy on board of neutral vessels; but they restored neutral property seized under the enemy's flag. But the endless investigations which this system caused, since a consequence of it was the searching of neutral vessels, produced by degrees a new and totally contrary principle, that the flag protects the cargo. The plenipotentiaries of Great Britain, Austria, France, Prussia, Russia, Sardinia and Turkey, assembled at Paris in April, 1856, agreed that the neutral flag should cover an enemy's goods, with the exception of contraband of war; and that neutral goods, with the exception of contraband of war, are not liable to capture under the enemy's flag. In the arbitration (in 1872) at Geneva of the *Alabama* claims of the United States against Great Britain, three rules were agreed to by the parties, to the effect that a neutral government is bound to use due diligence to prevent the fitting out in, or departure from, any of its ports of a vessel which it has reasonable ground to believe is intended to carry on war with a power with which it is at peace; that it is bound not to permit a belligerent to make use of its ports as a basis of naval operations, or a source of recruitment of men or military supplies; that it is bound to exercise due diligence in its own ports or waters, and as to all persons within its jurisdiction, to prevent any violation of these duties and obligations. At the meeting of The Hague Conference in 1907, new regulations were adopted concerning the rights and duties of neutrals in times of war, and an International Prize Court was provided for to which appeal could be made against the acts of warring countries. The regulations adopted were calculated to mitigate greatly the sufferings of neutrals, both on the sea and on land.

Neutralization (n ū -tral-ī-zā'shun), in chemistry, the process by which an acid and an alkali are so combined as to disguise each other's properties or render them inert

ST. PETERSBURG AND THE NEVA

Neutral Salts (nū′tral), salts in which all the hydrogen atoms capable of replacement by acid or basic radicals have been so replaced.

Neutral Tint (nū′tral), a pigment used in water colors, of a dull grayish hue partaking of the character of none of the bright colors. It is prepared by mixing together blue, red and yellow in various proportions.

Neuwied (noi′vēt), a town of Rhenish Prussia, 7 miles below Coblentz, on the right bank of the Rhine. It contains a palace, surrounded with extensive gardens, and has an establishment of the Moravian Brethren, who amount to 500 or 600 individuals, and have excellent schools, which are attended by many English pupils. Pop. 18,177.

Neva (nē′va), a river of Russia, which issues from Lake Ladoga, and after a westerly course of about 40 miles flows into the Gulf of Finland below St. Petersburg, by several mouths. It is generally frozen over from October to April. Its commercial importance is enhanced by canals, which connect it with remote parts of the empire.

Nevada (nē-vä′dȧ), one of the United States, bounded N. by Oregon and Idaho, E. by Utah and Arizona, S. W. and W. by California; area 110,690 sq. miles. Nearly the whole State belongs to the 'Great Basin,' the waters of which do not reach the sea, and which consists of a series of long narrow basins, separated from each other by steep and rugged mountains. These include the slopes of the Sierra Nevada on the west, and several other groups, such as the Humboldt River Mountains, Diamond Mountains, Shoshone Mountains, etc. There are several salt lakes, including Lakes Walker, Carson and Pyramid. The chief river, besides the Colorado, is the Humboldt River. The rivers lose themselves in the soil or enter the salt lakes. Much of the State is very arid, but it includes tracts such as the charming Carson Valley, rich both in vegetation and mineral wealth. The climate is healthy, but marked by great extremes. The principal industry of the State up to this time is mining. Silver is the chief mineral product, and the mines of the Comstock Lode have been among the richest in the world. Gold, copper, lead, quicksilver and nickel are also found. Solid masses of salt of great purity are abundantly found in many places. A valuable deposit of anthracite coal has been discovered on the Elks River, near Humboldt, which is being developed. There are numerous mineral springs and also geysers. Only a comparatively small area is suitable for tillage, but it is believed that several millions of acres can be redeemed by irrigation, and works for this purpose are being constructed. Its products are spring wheat, barley, oats, potatoes, and there is much good pasturage, on which cattle fatten readily. Cotton and subtropical fruits do well in the south. The Southern Pacific Railway passes through the State. The capital is Carson City, but Reno is the largest town. Pop. 81,875.

Nevada, a city of Missouri, the capital of Vernon Co., 90 miles S. W. of Sedalia, on the Missouri Pacific and the Missouri, Kansas & Texas Railroads. Its industries include lumber and flour mills, zinc smelters, iron and carriage works. Here is a State lunatic asylum and a convent school. Pop. 7176.

Nevada City, a town of California, in a hilly region, about 60 miles N. N. E. of Sacramento. Here are rich mines of gold and the town has mills and breweries and is largely interested in fruit culture. It is surrounded by grand mountain scenery and has a healthy climate, which makes it a frequented health resort. Pop. 2689.

Nevers (ne-vār), France, on the right bank of the Loire, at the confluence of the Nièvre, 153 miles S. S. E. Paris. It is the see of a bishop, and has a cathedral (in part dating from the eleventh century, restored 1883), a somewhat heavy building; the ducal palace, now used by the courts of justice; a hôtel de ville, etc. Nevers has important industrial establishments, including potteries and porcelain works, producing ware which has long been famed. The navy cannon foundry, the largest ordnance foundry in France, was in 1880 turned into a practical school for boiler making and engine fitting. Pop. 26,673.

Neviansk (ne-vi-ansk′), a town of Russia, in the government of Perm, about 60 miles northwest of Ekaterinburg. It is situated on the eastern slope of the Ural Mountains, in a district rich in iron and auriferous sand, and is the center of the important iron works in the populous valley of the Neva. Pop. 17,950.

Nevis (nev′is), a small island of the British West Indies, belonging to the Leeward group, and lying off the southwest extremity of St. Kitts, from which it is separated by a channel 2 miles broad. It is a beautiful spot, little more than a single mountain, which rises 2500 feet from the sea, about 24 miles in circumference; area, 24,640 acres. It is of

NEVADA
Scale of Miles
0 10 20 30 40 50 60 70 80
Railroads
Railroads Projected
State Capital
Indian Reservations
Forest Reservations
Size of type indicates relative importance of places
C.S.HAMMOND & CO., N.Y.
OREGON
IDAHO
CALIFORNIA
UTAH
ARIZONA
Carson City
Reno
Virginia City
Lovelocks
Winnemucca
Elko
Ely
Goldfield
Beatty
Tonopah
Las Vegas
Austin
Eureka
Lake Tahoe
Humboldt L.
Carson L.
Pyramid L.
Walker L.
Mono Lake
Owyhee
Duck Valley I.R.
Mc Dermitt
Denio
Goose L.
Twin Pks.
Disaster Pk.
Mad L.
New Year L.
Alkali L.
Massacre L.
Middle L.
West L.
Ashdown
Rebel Creek
Paradise Valley
Amos
Quinn R.
Quinn River Range
Pine Forest Range
Pueblo Val.
Kings R.
Antelope Range
Black Rock Desert
Granite Range
Division Pk.
Hausen
Eagleville
Cedarville
Willowpoint
Winnemucca Pk.
Black Butte
Mt. Fox
Buffalo Meadows
Deephole
Sulphur
Rosebud Mts.
Eugene Mts.
Cosgrave
Humboldt Ho.
Mill City
Adelaide
Battle Mtn.
Cooper
Argenta
Lewis Jc.
Dean
Lander
Dillon
Baileys
Kennedy
Fitting
Oreana
Woolsey
Foltz
Unionville
Star
Rye Patch
Vernon
Seven Troughs
Sheep Head
Kumiva Pk.
Amedee
Round Hole
Pyramid
Granite Pt.
Browns
Miriam
Ocala
Parran
Whitelaine
Zelda
Leete
Fulais
Mussie Sink
Leetville
Stillwater
Fallon
Hill
Wonder
Hercules
Alpine
Dry L.
Carson
Marsala Sink
Salt Marsh
Boyer
Bernice
Mt. Grant
Clan Alpine Mts.
Silver Mts.
Victor
Ramsey
Taylor
Perkin
Hawes
Apache
Ft. Churchill
Wabuska
Fairview
Eagleville
Pilonolite
Pilot
Duluth
Mina
Boston
Golden
Cloverdale
Klondike
Sodaville
Rhodes
Redlich
Antonio
Manhattan
Tyho
Hotcreek
Sunnyside
Clifford
Stone Cabin
Horseshoe
Bellehelen
Reveille
Hannapah
Golden Arrow
Longstreets
Silverbow
Diamondfield
Columbia
Goldfield
Montezuma
Silver Pk.
Palmetto
Lida
Oasis
Laws
Poleta
Roosevelt
Mills
Roundvalley
Raymond
Northfork
Shaver
Alvord
Pollasky
Clovis
Fresno
Mattermoro
Dunlap
Reedley
Hammond
Hanford
Armona
Tulare
Exeter
Lindsay
Huron
Three Rivers
Visalia
Goshen
Independence
Millwood
Thebe
Citrus
Whitney
Iuyo
Lonepine
Mineral
King
Keeler
Owens Lake
Skidoo
Emigrant Springs
Darwin
Wild Rose
Olancha
Haiwee
Greenwater
Ballarat
Millspaugh
Shoshone
Zabriskie
Tecopa Sta.
Borax Flats
Freeman
Crackerjack
Dumont
Valjean
Riggs
Searles
Johannesburg
Atolia
Silver Lake
Berry
Soda Lake
Cima
Ames
Elora
Haden
Hanlon
Bryant
Leastalk
Ivanpah
Nipton
Calada
Crescent
Barnwell
Purdy
Searchlight
Newberry Mts.
Middle Pk.
Kingman
McConnico
Mohave
Jc.
City
Chloride
Quartzite
Eldorado Canyon
White Hills
Nelson
Roach
Borax
Jean
Sutor
Sandy
Goodsprings
Yellow Pine
Sloan
Bard
Black Hill
Arden
Bracken
Las Vegas
Manse
Spring Mtn Range
Pahrump
Pahrump Val.
Johnnie
Corn Creek
Ashmeadow
Indian Springs
Dry L.
Vegas Range
Charleston Pk.
Owens
Crystal
Dry Lake
Gypsum
Valley Apex
Dike
Stewart
Gold Butte
Rioville
Boulder
Virgin
Muddy
Logan
Overton
Bunkerville
Mesquite
Littlefield
Acton
Guelph
Roy
Monapa
Byron
Ute
Hiko
Alamo
Delamar
Panaca
Caliente
Pioche
Highland Range
Ursine
Newlands
Freiburg
Coal Val.
Whiteriver
Geyser
Patterson
Sunnyside
Hotcreek
Preston
Lund
Duckwater
Shoshone
Burbank
Garrison
Blackhorse
Osceola
Cleveland
Illipah
Hamilton
Seligman
Ely
Kimberly
Steptoe
McGill
Kent
Muncy
Cherry Cr.
Schellbourne
Regan
Pleasant Val.
Kern Mts.
Warm Sprs.
Diamond
Garden
Sacramento Pass
Roberts Mts.
Pine
Tonkin
Bridges
Canyon
Walters
Ravenswood
Vaughns
Curtis
Silver Cr.
Spencer
Catons
Austin Jc.
Simpson Park
Mt. Airy
Austin
Mts.
Ruby Hill
Prospect
Eureka
Joy
Cold Creek
Strawberry
Romano
Summit
Oak
Diamond
Mineral
Mineral Hill
Huntington
Cavecreek
Sherman
Ruby L.
Hobson
Greens
Gosiute L.
Gosiute
Mt. Taylors
Currie
Spruce
Ruby Valley
Franklin
Skelton
Raines
Evans
Haytanch
Palisade
Osino
Elburz
Ft. Halleck
Elko
Carlin
Lamoille
Blaine
Moleen
Bullion
Lee
Schley
Spruce
Antelope
Bews
Toiyabe Range
Ullin
Loray
Gravel Pit
Silver Zone Pass
Great Salt Desert
Cedar Mts.
Wells
Independence Mts.
Weiland Sta.
Monument Pk.
Halleck
Swaits Mt.
Tuscarora
Beaver
Beaver Pk.
Northfork
Deep Creek
Anderson
Aura
Columbia
Edgemont
Whiterock
Mountain City
Gold Cr.
Mortan
O'Neil
Contact
Charleston
White Peaks
Bear Mt.
Rowland
San Jacinto
Lucin
Toano Range
Independence Val.
Pequop Mts.
Pilot Pk.
Silver Zone Pass
Toano
Bews
Antelope
Spruce
Currie
Gosiute
Greens
Ibapah
Tippet
Cherry Cr.
Schellbourne
Regan
Pleasant Val.
Kern Mts.
Muncy
Kent
Steptoe
McGill
Lane
Kimberly
Cleveland
Osceola
Blackhorse
Garrison
Burbank
Shoshone
Patterson
Pk.
Sawtooth Pk.
Indian Pk.
Cedar Ra.
Needle Ra.
Confusion Range
Fortification Range
Pilot Range
Snake Val.
Spring Val.
Preston
Lund
Duckwater
Whiteriver
Geyser
Patterson
Sunnyside
Hotcreek
Tybo
Clifford
Stone Cabin
Horseshoe
Bellehelen
Reveille
Hannapah
Golden Arrow
Longstreets
Silverbow
Diamondfield
Columbia
Goldfield
Montezuma
Silver Pk.
Palmetto
Lida
Oasis
Laws
Poleta
Roosevelt
Mills
Roundvalley
Raymond
Northfork
Shaver
Alvord
Pollasky
Clovis
Fresno
Mattermoro
Dunlap
Reedley
Hammond
Hanford
Armona
Tulare
Exeter
Lindsay
Huron
Three Rivers
Visalia
Goshen
Independence
Millwood
Thebe
Citrus
Whitney
Iuyo
Lonepine
Mineral
King
Keeler
Owens Lake
Skidoo
Emigrant Springs
Darwin
Wild Rose
Olancha
Haiwee
Greenwater
Ballarat
Millspaugh
Shoshone
Zabriskie
Tecopa Sta.
Borax Flats
Freeman
Crackerjack
Dumont
Valjean
Riggs
Searles
Johannesburg
Atolia
Silver Lake
Berry
Soda Lake
Cima
Ames
Elora
Haden
Hanlon
Bryant
Leastalk
Ivanpah
Nipton
Calada
Crescent
Barnwell
Purdy
Searchlight
Newberry Mts.
Middle Pk.
Kingman
McConnico
Mohave
Jc.
City
Chloride
Quartzite
Eldorado Canyon
White Hills
Nelson
Roach
Borax
Jean
Sutor
Sandy
Goodsprings
Yellow Pine
Sloan
Bard
Black Hill
Arden
Bracken
Las Vegas
Manse
Spring Mtn Range
Pahrump
Pahrump Val.
Johnnie
Corn Creek
Ashmeadow
Indian Springs
Dry L.
Vegas Range
Charleston Pk.
Owens
Crystal
Dry Lake
Gypsum
Valley Apex
Dike
Stewart
Gold Butte
Rioville
Boulder
Virgin
Muddy
Logan
Overton
Bunkerville
Mesquite
Littlefield
Acton
Guelph
Roy
Monapa
Byron
Ute
Hiko
Alamo
Delamar
Panaca
Caliente
Pioche
Highland Range
Ursine
Newlands
Freiburg
Coal Val.
Whiteriver
Geyser
Patterson
Sunnyside
Hotcreek
Preston
Lund
Duckwater
Shoshone
Burbank
Garrison
Blackhorse
Osceola
Cleveland
Illipah
Hamilton
Seligman
Ely
Kimberly
Steptoe
McGill
Kent
Muncy
Cherry Cr.
Schellbourne
Regan
Pleasant Val.
Kern Mts.
Warm Sprs.
Diamond
Garden
Sacramento Pass
Roberts Mts.
Pine
Tonkin
Bridges
Canyon
Walters
Ravenswood
Vaughns
Curtis
Silver Cr.
Spencer
Catons
Austin Jc.
Simpson Park
Mt. Airy
Austin
Mts.
Ruby Hill
Prospect
Eureka
Joy
Cold Creek
Strawberry
Romano
Summit
Oak
Diamond
Mineral
Mineral Hill
Huntington
Cavecreek
Sherman
Ruby L.
Hobson
Greens
Gosiute L.
Gosiute
Mt. Taylors
Currie
Spruce
Ruby Valley
Franklin
Skelton
Raines
Evans
Haytanch
Palisade
Osino
Elburz
Ft. Halleck
Elko
Carlin
Lamoille
Blaine
Moleen
Bullion
Lee
Schley
Spruce
Antelope
Bews
Toiyabe Range
Ullin
Loray
Gravel Pit
Silver Zone Pass
Great Salt Desert
Cedar Mts.
Wells
Independence Mts.
Weiland Sta.
Monument Pk.
Halleck
Swaits Mt.
Tuscarora
Beaver
Beaver Pk.
Northfork
Deep Creek
Anderson
Aura
Columbia
Edgemont
Whiterock
Mountain City
Gold Cr.
Mortan
O'Neil
Contact
Charleston
White Peaks
Bear Mt.
Rowland
San Jacinto
Lucin
Toano Range
Independence Val.
Pequop Mts.
Pilot Pk.
Silver Zone Pass
Toano
Bews
Antelope
Spruce
Currie
Gosiute
Greens
Ibapah
Tippet
Cherry Cr.
Schellbourne
Regan
Pleasant Val.
Kern Mts.
Muncy
Kent
Steptoe
McGill
Lane
Kimberly
Cleveland
Osceola
Blackhorse
Garrison
Burbank
Shoshone
Patterson
Pk.
Sawtooth Pk.
Indian Pk.
Cedar Ra.
Needle Ra.
Confusion Range
Fortification Range
Pilot Range
Snake Val.
Spring Val.
Long Val.
Red Rock
Dewey
Olinghouse
Derby
Clarks
Hatch
Truckee
Ramsey
Browns
Steamboat
Iceland
Truckee
Frankltown
Lakeview
Tahoe
Incline
Verdi
Reno
Sparks
Wadsworth
Truckee R.
Canal
Carson R.
Carson Sink
Salt Marsh
Humboldt R.
Humboldt Sink
Lovelocks
Humboldt L.
Pyramid L.
Granite Pt.
Browns
Miriam
Ocala
Parran
Whitelaine
Zelda
Leete
Fulais
Mussie Sink
Leetville
Stillwater
Fallon
Hill
Wonder
Hercules
Alpine
Dry L.
Carson
Marsala Sink
Salt Marsh
Boyer
Bernice
Mt. Grant
Clan Alpine Mts.
Silver Mts.
Victor
Ramsey
Taylor
Perkin
Hawes
Apache
Ft. Churchill
Wabuska
Fairview
Eagleville
Pilonolite
Pilot
Duluth
Mina
Boston
Golden
Cloverdale
Klondike
Sodaville
Rhodes
Redlich
Antonio
Manhattan
Tyho
Hotcreek
Sunnyside

volcanic origin, is well watered and in general fertile, producing sugar, which, with molasses and rum, forms the sole export. The principal town is Charleston. Pop. 12,774.

New. For names beginning with this adjective not given here, see the articles under the name which follows it.

New Albany, a city of Indiana, capital of Floyd Co., on the Ohio River, nearly opposite Louisville, Ky., with which it is connected by bridges. It is the seat of DePauw (Women's) College, organized in 1850, and has a national cemetery. Its industries are numerous and important, including pork packing, cutlery and edge-tool works, window and plate-glass, cotton and woolen factories, large rolling mills, furniture factories and tanneries, etc. It has a large shipping and supply trade. Pop. 20,629.

Newark (nū'ärk), a city of Ohio, capital of Licking Co., on the Licking River, 33 miles E. by N. of Columbus, and on the Ohio Canal and several railroads. It is in a grain, wool and live-stock region, and has railroad and locomotive shops and extensive manufacturing industries, its products embracing engines and boilers, cars, glassware, agricultural implements, bentwood, foundry and machine shop products. In the vicinity are extensive and striking examples of the works of the mound builders. Pop. 25,404.

Newark, a city and port of New Jersey, the seat of Essex Co., 9 miles west of New York City, finely situated on the west side of Passaic River, about 4 miles from its mouth in Newark Bay. It is the largest city in the State, and is regularly laid out with wide straight streets, generally intersecting at right angles. Broad Street, the principal thoroughfare, is more than 120 feet broad, shaded with elms, and divides the city into two nearly equal parts. It contains few notable public buildings, but several of its business establishments are housed in imposing buildings, and it has some handsome churches and a number of educational institutions. Here is the New Jersey Historical Society. Newark is distinguished as a manufacturing town, the works including a very large cotton-thread factory, a sewing machine factory, and manufactures of furniture, machinery and castings, leather, boots and shoes, saddlery, oilcloth, hardware, clothing, india-rubber goods, a large number of extensive breweries, etc. There is a considerable coasting trade and constant steamboat communication with New York, while there is a network of steam and electric railways connecting with neighboring and distant towns. An extensive system of public parks has been inaugurated. Pop. 347,469.

Newark, a village in Wayne Co., New York, 30 miles S. E. of Rochester. It has railroad shops, canneries and extensive nurseries, and manufactures of tin, gloves, paper-boxes, etc. Pop. 6227.

Newark-upon-Trent, a municipal borough of England, in Nottinghamshire, on a branch of the Trent, 17 miles northeast of Nottingham. The corn market is one of the largest in the kingdom. Iron founding, brass founding, brewing, and the manufacture of boilers and agricultural implements are carried on. Newark returned two members to Parliament until 1885; it now gives name to a parliamentary division. Pop. 16,412.

New Bedford (bed'fĕrd), a city and port of Massachusetts, 55 miles south from Boston, on the estuary of the Acushnet, which opens into Buzzard's Bay. It is connected by bridges with Fairhaven, and is noted for the elegance of its private residences and its handsome public buildings. Its public library is one of the oldest institutions of the kind in this country. Until the middle of the nineteenth century it was largely engaged in the whale fishery. It is now an active manufacturing city, some of its cotton and yarn mills being among the largest in the world. It ranks first in this country in the production of fine cotton goods. It has also iron and copper, oil and candle works, boot and shoe factories, and many other industries. Pop. 96,652.

Newbern (nu'bĕrn), a city of North Carolina, the capital of Craven County, the port of entry for Pamlico district, on the estuary of the Neuse, which opens into Pamlico Sound. A large traffic in early vegetables for the northern markets is carried on. It also ships large quantities of cotton, lumber, and naval stores and has important fisheries. It was founded by Swiss settlers in 1710 and was formerly the capital of the state. Pop. 9961.

Newberry, a town, capital of Newberry County, South Carolina, 47 miles W. N. W. of Columbia. It has manufactures of cotton, cotton-seed oil, fertilizers, etc., and is an important market for cotton. Pop. 5028.

New Brighton (brī'tun), a rising watering place in Cheshire, England, 4 miles north of Birkenhead. It has excellent bathing. Pop. 5000.

New Brighton, a borough of Beaver County, Pennsylvania, on Beaver River, near its entrance into the Ohio, and 28 miles N. W. of Pittsburgh. The river affords abundant water power, and there are numerous manufactures, including engines, machinery, carriages, nails, chains, pottery, rivets, kegs, bathtubs, etc. Pop. 8329.

New Brighton, a former city of New York, on the N. E. shore of Staten Island, 6 miles S. W. of Manhattan Island. It now forms part of the borough of Richmond, New York city, and contains many handsome residences of New York business men. Here is the Sailors' Snug Harbor, for aged and disabled seamen, and an institution for destitute children of seamen.

New Britain (brit'n), the largest of a group of islands occupied by Germany, situated in what is now called the Bismarck Archipelago, east of New Guinea in the Pacific Ocean.

New Britain, a city of Hartford County, Connecticut, 10 miles S. W. of Hartford. It has a State Normal School, the New Britain Institute, a Catholic cathedral, etc. Its manufactures are extensive, including hardware, cutlery, hosiery, knit goods, hot-air registers, etc. The American Hardware Company employs over 6000 men. Pop. 43,916.

New Brunswick (brunz'wik), a province of the Dominion of Canada, on the east coast of North America; bounded west by the State of Maine; northwest by the province of Quebec; north by Chaleur Bay; east by the Gulf of St. Lawrence and Northumberland Strait, the latter separating it from Prince Edward Island; and south by the Bay of Fundy and part of Nova Scotia; area, 27,322 square miles, or about the same as the mainland of Scotland. Its coast line is interrupted only at the point of junction with Nova Scotia, where an isthmus of not more than 14 miles in breadth connects the two territories, and separates Northumberland Strait from the Bay of Fundy, which it is proposed to unite by means of a canal. The general surface of the country is level, but hilly in the northwest. The principal rivers are the St. John, 450 miles in length, and navigable for vessels of 100 tons to Fredericton, 90 miles from its entrance into the Bay of Fundy; and the Miramichi, 225 miles in length, which falls into the bay of the same name, and is navigable for large vessels 25 miles from the gulf. There are a number of lakes, the largest, Grand Lake, being 25 miles long by about 5 miles broad. Coal is plentiful, and iron ore abundant; the former is found over 10,000 square miles, or more than one-third of the whole area. Copper, manganese, gypsum, limestone and freestone abound. The climate, like that of other portions of Canada, is subject to extremes of heat and cold, but is, on the whole, healthy. After agriculture, lumbering and fishing are the main occupations of the inhabitants, though many are engaged in mining and manufacturing. A very large portion of the soil is well adapted for agriculture, but only about one-tenth of the land suitable for agriculture has yet been taken up. Great attention has of late years been paid to the improvement of live stock. New Brunswick is very largely wooded, and the forests supply three-fourths of the total exports. The fisheries are of great value. The minerals exported include coal, gypsum, antimony ore, copper ore, manganese, plumbago and unwrought stone. Owing to its cheap coal and proximity to the markets of the United States and Europe, New Brunswick may develop as an important manufacturing country. Discovered by Sebastian Cabot in 1498, it formed, with Nova Scotia, the French colony of Acadia (1604-1713), was erected into a separate province in 1784, and in 1867 became a province of the Dominion of Canada. The capital is Fredericton, but the chief commercial center is St. John, which has one of the finest harbors on the North Atlantic. Pop. 351,889.

New Brunswick, a city of New Jersey, capital of Raritan County, on the Raritan River, which here becomes navigable, 31 miles southwest of New York, and on the Delaware and Raritan Canal. It is the seat of Rutgers College, which was organized in 1766, with which is connected a state agricultural and mechanical college and a theological seminary of the Dutch Reformed Church; also of the Sage Library. Here are the largest laboratories in the United States, also extensive manufactures of india-rubber goods, plaster, paper-hangings, carpets, and many other articles. Pop. 23,388.

Newburg, a city of Orange County, New York, on the W. bank of the Hudson River, 60 miles N. of New York city. It is built on high ground commanding a fine view of the river and the Highlands. It has a large river trade in dairy products, grain, flour and coal, and large manufactures of cotton goods, woolen goods, hats, carpets, machinery, and other articles. It

has several academic institutions, a public library, etc. The adjacent country is noted for its extensive dairies and the superior quality of the butter which they produce. Pop. 27,805.

Newburgh (nū′burg), a village of Cuyahoga County, Ohio, 6 miles S. E. of Cleveland, of which city it now forms a part. It has important iron and steel industries. Pop. 5813.

Newbury (nū′ber-i), a municipal borough in Berkshire, England, 52 miles west of London, on the Kennet, which is made navigable to Reading, and joins the Thames. There are malting establishments and corn mills, and a considerable traffic is carried on by the Kennet and Avon Canal. In 1643 and 1644 battles were fought in the vicinity between the Royalists and the Parliamentarians, both resulting in victory for the Royalists. Pop. 12,108.

Newburyport (nū′be-ri-pōrt), a city and port of Massachusetts, one of the capitals of Essex County, about 3 miles above the mouth of the Merrimac, and 35 miles N. N. E. of Boston. It contains a city hall, a marine museum, homes for aged women and destitute children, the Putnam Free School, etc. It has cotton and woolen factories, large saw and planing mills, and extensive manufactures of machinery, boots and shoes, combs, celluloid goods, cordage, silverware, etc. Some shipbuilding is carried on. Pop. 14,949.

New Caledonia (kal-e-dō′ni-a), an island in the Pacific, situated about 800 miles east of Australia. It was discovered by Captain Cook in 1774, and appropriated by the French as a convict settlement in 1854. The capital is Noumea, near the south end of the island, with a fine harbor. The island is mountainous, well watered and wooded, and yields all sorts of Polynesian produce. The climate is hot but healthy. There are nickel mines, and also mines of copper and cobalt, considerable quantities of which are raised and exported, as also chrome, copra, coffee, etc. With the adjacent Loyalty Islands the area is estimated at 6724 square miles, and the population at 51,415. Including settlers and miners, officials and troops, and convicts and their families, the white population numbers about 22,000. The native population, of Melanasian race, and cannibals in habit, have diminished greatly since the French occupation. The attempt of the French to work the settlement both as a free and as a penal colony has not hitherto answered well; and the frequent escape of convicts to Australia has been a continual source of local trouble and international dispute.

Newcastle (nū′kas-tl), the principal shipping port of New South Wales after Sydney, situated at the mouth of the Hunter River, upon ground rising somewhat steeply from the sea. It is a well laid out, well built, and progressive town. Pop. 54,991.

New Castle, a city, capital of Lawrence County, Pennsylvania, 50 miles N. W. of Pittsburgh. It has several railroad connections and a large shipping and supply-trade, with extensive manufacturing interests. Its products include cars, tin plate, nails, window glass, dynamite, paper, flour, etc. It has also large rolling mills, iron foundries and furnaces. Pop. 36,280.

New Castle, a city and port of delivery of New Castle County, Delaware, on the Delaware River, 6 miles below Wilmington. It has fishing and manufacturing interests, and is notable as being founded by the Dutch in 1650, and the first stopping place of William Penn in the New World. Pop. 3351.

New Castle, a town, capital of Henry County, Indiana, on the Blue River, 20 miles S. of Muncie. Its manufactures include furniture, carriages, lumber, shovels, etc. Pop. 9446.

Newcastle-under-Lyme, a municipal and parliamentary borough of England, Staffordshire, close to the Potteries, and 19 miles N. N. W. of the town of Stafford. Coal and iron works are carried on in the neighborhood, giving employment to a large number of the inhabitants, most of whom, however, find work in the Potteries. In the town itself a few industries are carried on, such as brewing, malting, tanning and paper making. By canal it is connected with the Trent, Mersey, Severn and Thames. Pop. (1911) 20,204.

Newcastle-upon-Tyne, a municipal and parliamentary borough, river port, and episcopal city in the county of Northumberland, England, but forming a county in itself. It stands on the north bank of the Tyne, about 9 miles from its mouth, and 276 miles by railway from London. Among the public buildings are the Cathedral of St. Nicholas, an ancient Gothic structure; the Roman Catholic Church and Cathedral of St. Mary, a modern building in the early English style; the town hall, a handsome modern edifice; the Moot Hall, in which the assizes for the county are held; the castle,

one of the finest specimens of castellated Norman in England, recently restored; the Central Railway station, an imposing building; the public library (opened 1882); and the General Market. Among the educational institutions the chief are the College of Medicine and Surgery; and the College of Physical Science, in connection with Durham University. Newcastle, owing to the rich mineral products of the neighborhood, has attained a first position among the great centers of British enterprise. Some of the more important of its industries are ship building, and the manufacture of locomotive and marine engines, cannon, shot, tools, firebricks, hemp and wire ropes, cables, anchors, sails, etc. Situated in the midst of one of the largest coal fields in England, it exports immense quantities of coal. Newcastle is one of the Tyne ports (which include also North and South Shields). During the past few years vast improvements have been made on the river, and all the way between Shields and Newcastle there is now a depth of 20 feet at low water. (See *Tyne.*) Newcastle is situated at the eastern termination of the wall of Hadrian, and Roman antiquities have been repeatedly discovered in it. The castle or fortress was built by Robert, son of William the Conqueror, about 1080, about which time it received its present name. Newcastle was a frequent object of attack in the wars between England and Scotland. It was taken possession of by the Scottish Covenanting army in 1640 and in 1644, and in 1647 Charles I was delivered here by the Scottish army to the parliamentary commissioners. Pop. (1911) 266,671.

Newchwang (nū-chwäng′), a city of China, in Manchuria, on the Liao River, about 35 miles from its mouth. It is practically an inland city, but was chosen as one of the ports to be opened to foreign commerce by the Treaty of Tien-tsin. It is the chief port of Manchuria and has an immense commerce, exporting grain, beans, ginseng, deer horns, liquorice and provisions. The foreign settlements and the trade, however, are necessarily at Ying-tze, near the river's mouth. Pop. estimated at 40,000 to 60,000.

Newcomb (nū′kom), Simon, astronomer, born at Wallace, Nova Scotia, in 1835; died in 1909. He came to the United States in 1853, was graduated at the Lawrence Scientific School in 1858, and in 1861 was made Professor of Mathematics in the United States navy, being assigned to the Naval Observatory at Washington. While there he negotiated for the 26-inch telescope authorized by Congress and superintended its construction. He was appointed to observe the transit of Venus in 1874, was made superintendent of the *Nautical Almanac* in 1877, and became professor of mathematics and astronomy at Johns Hopkins University in 1894. His later years were spent in independent research. He made important discoveries in astronomy and wrote *Popular Astronomy, A Course of Mathematics, Principles of Political Economy,* etc.

Newcomen (nū-kom′en), Thomas, a locksmith at Dartmouth, in Devonshire, towards the close of the seventeenth century, and one of the inventors of the steam engine. Newcomen conceived the idea of producing a vacuum below the piston of a steam engine after it had been raised by the expansive force of the steam, which he effected by the injection of cold water to condense the vapor. The merit of first applying the steam engine to practical purposes is thus due to Newcomen, who, in conjunction with Captain Savery and John Cowley, took out a patent for the invention in 1705. See *Steam Engine.*

New Decatur, a city of Morgan County, Alabama, one mile S. of Decatur. It has cotton compresses, oil mills, spoke and handle factories, etc. Pop. 6118.

Newel (nū′el), the central space or column round which the steps of a circular staircase are wound. When there is no central pillar the newel is said to be open.

Newell, Robert Henry, humorist, born at New York in 1836; died in 1901. He became a journalist and editor in New York and was widely known for his humorous and satiric '*Orpheus C. Kerr*' papers (5 vols. of letters on Civil war topics). He also wrote novels, poems, etc.

New England (ing′gland), the northeast portion of the United States, comprising the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut. Originally called North Virginia when granted by James I to the Plymouth Company in 1606, it received the name of New England from Captain John Smith, who explored and made a map of the coast in 1614.

New Forest (for′est), a large tract in England, in the southwest of Hampshire, forming one of the royal forests, about 60 miles in circuit, which is commonly said to have been laid waste and turned into a forest

by William the Conqueror. It contains within its limits portions of cultivated land belonging to private persons. The public portions are partly inclosed, partly uninclosed, and present much fine sylvan scenery. There are several villages within the forest area, Lyndhurst being the forest capital. Oak and beech are the principal trees.

Newfoundland (nū'fund-land), a large island of British North America, in the Atlantic Ocean, at the mouth of the Gulf of St. Lawrence, and nearer to Europe than any other part of America—the distance from the port of St. John's to the harbor of Valentia, in Ireland, being only about 1918 miles. Area, excluding the territory of Labrador on the mainland, which belongs to this colony, 40,000 square miles (or nearly 10,000 more than Ireland). It is of extremely irregular form, with a coast line, particularly on the southeast and south, broken up in a remarkable manner by broad and deep bays, harbors, coves, inlets and lagoons.

The interior is much intersected by rivers and lakes, exhibits many barren tracts, and is but thinly wooded except on the banks of the rivers; nevertheless there is much more land suited for settlement than was once supposed, and the forests as a whole are valuable. The largest rivers are Humber River and the river Exploits; the largest lakes Grand Pond and Indian Lake. The minerals comprise coal, gypsum, copper, lead, nickel, silver, iron and gold. Copper exists in large quantities, and is worked to a greater extent every year. The winter is long, severe and damp, and the summer is dry, short and hot; but the climate, though severe, is healthful, the mortality among the inhabitants being lower than in most parts of the American continent. The principal trees are pine, spruce, birch, willow and mountain-ash. The crops generally are abundant, particularly potatoes. Grain crops also thrive well in parts, wheat having been known to yield 50 bushels per acre; but both climate and soil are more favorable to pasturage and green crops than to grain. Dairy farming is being introduced, and agriculture is sure to receive more attention in the future. In the valleys on the western coast are large tracts, now almost wholly unoccupied, capable of being converted into fairly productive grazing land, but waiting for the construction of railways. The southeastern portion is the most thickly settled. The wild animals are the caribou or reindeer, bear, wolf, hare, beaver, marten, wild cat, etc.

The famous banks of Newfoundland around the coasts swarm with almost every variety of fish, particularly cod. The cod fishery is prosecuted from June to November, and may be said, with the other fisheries, of seal, lobster, herring and salmon, to form the staple occupation of the inhabitants. Cod fish is far the largest export. The trade is chiefly with Britain, Canada and the United States. The original Atlantic cable lands in Heart's Content Harbor. Newfoundland was discovered by John Cabot in 1497, and the first English colony was planted in 1621. A struggle for supremacy took place between the English and the French; but in 1713 Newfoundland and its dependencies were declared, by the Treaty of Utrecht, to belong wholly to Great Britain, the French reserving a right to fish and cure on certain parts of the coast. Responsible government was granted in 1833. The colony, as yet, declines to join the Canadian Confederation. The only noteworthy town on the island is St. John's, the capital. Pop. 217,037.

Newfoundland Dog. According to Youatt this is simply a large spaniel. It is supposed to have come originally from Newfoundland, where it is employed by the natives as a beast of burden. It is the largest, the most courageous, and by far the most intelligent of the waterdogs, and has considerable webs between the toes.

Newgate (nū'gāt), the celebrated jail of the city of London, at the west end of Newgate street, mentioned as a prison early in the thirteenth century. In the fifteenth century Sir Richard Whittington in his will left funds to rebuild it; it was rebuilt a second time after the great fire of 1666, and a third time after the No Popery Riots of 1780. Its use as a prison has practically ceased.

New Granada. See *Colombia.*

New Guinea (gin'ē), or PAPUA, a large island in Australasia, next to Australia, of which it lies north, the largest on the globe; area, 305,900 square miles; length about 1500; breadth from 200 to 400 miles. It is separated from Australia on the south by Torres Strait, and from the Moluccas on the west by Gilolo Passage. The coasts are for the most part lofty, with mountains coming close to the sea, but in the neighborhood of Torres Strait the shore presents the appearance of a marshy flat covered with dense forests. In the interior there are still loftier mountains, covered with perpetual snow, and volcanoes. In the southeast end

Mount Owen Stanley rises to the height of 13,205 feet; farther west and near the north coast Mount Schopenhauer reaches 20,000 feet. The island is rich in tropical products, possesses a copious and peculiar flora and fauna (birds of paradise being especially numerous and gorgeous), and is suitable for tropical agriculture. The coast is miasmatic in many places; the mountainous interior is reported healthier. On the west coast are numerous Malay settlements, but the

Natives of New Guinea.

bulk of the inhabitants are Papuans, a race resembling the negroes of Guinea. Some are disposed to be friendly, others are fierce and intractable. The discovery of New Guinea was made by the Portuguese early in the sixteenth century, but little was known of it till recently. The naturalists were the first to make incursions into its interior, and among these Mr. A. R. Wallace, who visited it in 1858, was the pioneer. The missionaries came next, and mission stations have been formed by Germans on the northeast coast, and by the London Missionary Society at various points on the southeast coast. Germany and the Australian colonies also began to take an interest in New Guinea and the latter urged the home government to annex the eastern part of the island, the western portion having long been recognized as Dutch. At length the delimitation and division of the island between Great Britain, Germany and Holland was settled in 1885. That part of the island lying west of the 141st meridian is assigned to Holland, and comprises 150,755 square miles; the northern part of the remainder of the island is assigned to Germany, and the southern to Great Britain. The German territory, called Kaiser Wilhelm's Land, contains 68,785 sq. miles; the English territory 86,457 square miles. The islands of Torres Strait, which are the seat of a valuable pearl shell and trepang fishery, and which practically command the strait, have all been annexed to Queensland. A German chartered company whose object is to develop the resources of the country has stations in German New Guinea. The Dutch have done little or nothing for their portion of the island. Pop. estimated at about 200,000.

New Hampshire, one of the United States, bounded on the north by Canada, east by Maine, southeast by the Atlantic, south by Massachusetts, and west by Vermont, from which it is separated by the Connecticut River; area 9341 square miles. This State has a sea coast of only 18 miles. For the distance of 20 or 30 miles from the sea the land is almost level, but thereafter rises, and in its northern part is traversed southwest to northeast by a continuation of the Alleghenies, culminating in Mount Washington, 6293 feet high. There are a number of fine lakes and both lake and mountain scenery is beautiful. The mineral product is small, the metals including iron, lead, silver, zinc and tin. The principal crops are wheat, Indian corn, oats and barley; buckwheat, hay, hops, tobacco, potatoes, flax, beans and peas are also raised. Hay is far the most valuable product of the farms, and is increasing in value while the farm crops are decreasing. Apple and pear trees are abundant in the cultivated districts; and the hilly and mountainous regions are still covered with extensive forests of pine, oak, beech, birch, sugar-maple, etc. Manufactures are actively carried on, the principal being cotton, woolen and worsted goods, boots and shoes, leather, lumber, iron, machinery, furniture, etc. The mileage of railways is greater in proportion to population and wealth than in any other New England State. Education is well attended to, and there is a university, Dartmouth College, at Hanover. New Hampshire was first settled in 1623 at Dover and Portsmouth. The capital is Concord, the largest city and the chief manufacturing center is Manchester, and the only port is Portsmouth, where there is a navy-yard. Pop. 430,572.

New Haven (hā'vn), a seaport town of Connecticut, capital of New Haven County, on a bay of the same name in Long Island Sound, 72 miles northeast of New York. There are important manufactures of carriages, arms, wire, rubber goods, edge tools, clocks, musical instruments, pulp, paper, etc., and there is a large foreign trade, particularly with the West Indies. New Haven is widely known as the seat of Yale College (which see). Other educational institu-

NEW HAMPSHIRE

Scale of Miles
0 10 20 30 40

A 72°30′ B 72° C 71°30′ D 71° E 70°30′

1 2 3 4 5 6 — 45° 44°30′ 44° 43°30′ 43°

Richford · Montgomery · Newport · Fairfield · Cambridge · Morristown · Lyndon · Island Pond · St. Johnsbury · Waterbury · Barnet · MONTPELIER · Barre · Northfield · Williamstown · Woodsville · Littleton · Monroe · Lyman · Franconia · Lisbon · Bath · Profile Ho. · Swiftwater · Flume Ho. · N. Haverhill · Lincoln · E. Haverhill · Warren · Piermont · Orford · Orfordville · Wentworth · Lyme · W. Rumney · Lyme Cen. · Cheever · Hanover Cen. · Hanover · Etna · Enfield · Canaan Cen. · Hebron · Canaan · W. Canaan · Enfield · Bridgewater · Bristol · E. Grafton · Danbury · Springfield · Plainfield · Meriden · Cornish Flat · Windsor · Cornish Center · Croydon · Wilmot · E. Andover · Elkins · Potter Place · New London · Newport · Claremont Jc. · N. Newport · Guild · L. Sunapee · Salisbury · Mt. Kearsarge · Sutton · Claremont · N. Charleston · Unity · Mill Village · Charlestown · S. Acworth · Rockingham · Bellows Falls · Alstead · Drewsville · Walpole · Gilsum · Westmoreland · Sullivan · Munsonville · E. Sullivan · E. Westmoreland · Parkhill · Keene · Chesterfield · Spofford · Brattleboro · Westport · Swanzey · W. Swanzey · Chesterfield · Winchester · Fitzwilliam Depot · S. Vernon Jct. · Hinsdale · Richmond · Winchendon · Randolph · Bethel · Rutland · Hartford · W. Lebanon · Lebanon · Plainfield · Meriden · Windsor · Claremont Jct. · Newport · Guild · New London · Sunapee · Mt. Kearsarge · Sutton · Warner · Bradford · S. Newbury · E. Lempster · Washington · W. Henniker · Hillsboro · Hillsboro Cen. · Hillsboro Bridge · E. Deering · Bennington · Goffstown · Munsonville · Hancock · Harrisville · Dublin · Peterboro · Marlboro · Swanzey · Jaffrey · Troy · E. Jaffrey · W. Rindge · E. Rindge · Fitzwilliam Depot · Richmond · Winchendon · Warren · Summit · Warren · Orford · Orfordville · Wentworth · W. Rumney · Lyme · Cheever · Hanover Cen. · Plymouth · Groton · Canaan Cen. · Hebron · Canaan · Bridgewater · Bristol · E. Grafton · Danbury · Springfield · Enfield · W. Lebanon · Lebanon Cen. · Meriden · Cornish Flat · Cornish Center · Croydon · Wilmot · E. Andover · Elkins · Potter Place · New London · Newport · Claremont Jct. · N. Newport · Guild · L. Sunapee · Salisbury · Mt. Kearsarge · Sutton · Warner · Bradford · S. Newbury · E. Lempster · Washington · W. Henniker · Hillsboro · Hillsboro Cen. · Hillsboro Bridge · E. Deering · Bennington · Goffstown · Munsonville · Hancock · Harrisville · Dublin · Peterboro · Marlboro · Swanzey · Jaffrey · Troy · E. Jaffrey · W. Rindge · E. Rindge · Fitzwilliam Depot · Richmond · Winchendon · Randolph · Bethel · Rutland · Hartford · W. Lebanon · Lebanon · Plainfield · Meriden · Windsor · Claremont Jct. · Newport · Guild · New London · Sunapee · Mt. Kearsarge · Sutton · Warner · Bradford · S. Newbury · E. Lempster · Washington · W. Henniker · Hillsboro · Hillsboro Cen. · Hillsboro Bridge · E. Deering · Bennington · Goffstown · Munsonville · Hancock · Harrisville · Dublin · Peterboro · Marlboro · Swanzey · Jaffrey · Troy · E. Jaffrey · W. Rindge · E. Rindge · Fitzwilliam Depot · Richmond · Winchendon

Second L. · Connecticut L. · Pittsburg · Clarksville · W. Stewartstown · Stewartstown · Colebrook · Dixville Notch · Columbia · Dixville · Wentworth Location · Coos · Stratford · Groveton · Percy · Stark · Northumberland · Lancaster · Riverton · Dalton · Jefferson · Scott · Randolph · Berlin · Berlin Mills · Gorham · Meadows · Whitefield · Wing Road · Bethlehem · Twin Mts. · Quebec Jct. · Vlazen Jct. · Bald Mt. · Mt. Adams · Mt. Washington · Gilead · Canton · Weld Pond · Errol · Lakeside · Dummer · W. Milan · Milan · Umbagog L. · Richardson L. · Rangeley Lakes · Rangeley D. · Rangeley Lake · Mooselucmaguntic · Bemis · Androscoggin R. · Indian Stream · Halls Stream · Connecticut R. · Upper Ammonoosuc R. · Ammonoosuc R. · Israel R. · Androscoggin R. · Wentworth Location · Dixville · Notch · Columbia · Dixville · Island Pond · Coos · Stratford · Groveton · Percy · Stark · Northumberland · Lancaster · Riverton · Dalton · Jefferson · Scott · Randolph · Berlin · Berlin Mills · Gorham · Meadows · Whitefield · Wing Road · Bethlehem · Twin Mts. · Quebec Jct. · Vlazen Jct. · Bald Mt. · Mt. Adams · Mt. Washington · Gilead · Canton · Weld Pond · Errol · Lakeside · Dummer · W. Milan · Milan · Umbagog L. · Richardson L. · Rangeley Lakes · Rangeley D. · Rangeley Lake · Mooselucmaguntic · Bemis · Androscoggin R.

Littleton · Monroe · Lyman · Franconia · Twin Mts. · Haystack Mt. · Mt. Haircock · Lisbon · Bath · Profile Ho. · Swiftwater · Flume Ho. · N. Haverhill · Lincoln · E. Haverhill · Woodsville · Barnet · Waterbury · Barre · Northfield · Williamstown · MONTPELIER · Whitefield · Wing Road · Bethlehem · Twin Mts. · Quebec Jct. · Vlazen Jct. · Bald Mt. · Mt. Adams · Mt. Washington · Gilead · Canton · Weld Pond · Errol · Lakeside · Dummer · W. Milan · Milan · Umbagog L. · Richardson L. · Rangeley Lakes · Rangeley D. · Rangeley Lake · Mooselucmaguntic · Bemis · Androscoggin R. · Indian Stream · Halls Stream · Connecticut R. · Upper Ammonoosuc R. · Ammonoosuc R. · Israel R. · Androscoggin R. · Wentworth Location · Dixville · Notch · Columbia · Dixville · Island Pond · Coos · Stratford · Groveton · Percy · Stark · Northumberland · Lancaster · Riverton · Dalton · Jefferson · Scott · Randolph · Berlin · Berlin Mills · Gorham · Meadows · Whitefield · Wing Road · Bethlehem · Twin Mts. · Quebec Jct. · Vlazen Jct. · Bald Mt. · Mt. Adams · Mt. Washington · Gilead · Canton · Weld Pond · Errol · Lakeside · Dummer · W. Milan · Milan · Umbagog L. · Richardson L. · Rangeley Lakes · Rangeley D. · Rangeley Lake · Mooselucmaguntic · Bemis · Androscoggin R.

Conway · Waterville · Madison · Silver Lake · Hiram · Sebago Lake · Tamworth · N. Sandwich · S. Tamworth · Sandwich · Ossipee · Freedom · Ossipee Lake · Moultonville · Tuftonborough · Centre Harbor · Melvin Village · N. Wolfboro · Ossipee · Ossipee Lake · Holderness · Squam L. · Plymouth · Groton · Thornton · Campton · Village · W. Thornton · Woodstock · Centerville · Ossipee · Ossipee Lake · Ossipee Mts. · Ossipee R. · Saco R. · Ossipee · Ossipee Lake · Ossipee Mts. · Ossipee R. · Saco R.

Meredith · New Hampton · Lakeport · Great B. · Laconia · W. Alton · Winnisquam · E. Tilton · Belmont · Gilman · ton · Gilmanton Iron Works · Franklin Falls · Franklin · E. Canterbury · Canter · bury · Barnstead · Pittsfield · Center Barnstead · Farming ton · Middleton · New Durham · Milton · Union · Milton Mills · Wakefield · Sanbornville · Wolfeboro Falls · Wolfeboro · S. Wolfboro · The Weirs · Winnepesaukee · Lake · Meredith · New Hampton · Lakeport · Great B. · Laconia · W. Alton · Winnisquam · E. Tilton · Belmont · Gilman · ton · Gilmanton Iron Works · Franklin Falls · Franklin · E. Canterbury · Canter · bury · Barnstead · Pittsfield · Center Barnstead · Farming ton · Middleton · New Durham · Milton · Union · Milton Mills · Wakefield · Sanbornville · Wolfeboro Falls · Wolfeboro · S. Wolfboro · The Weirs · Winnepesaukee · Lake · Meredith · New Hampton · Lakeport · Great B. · Laconia · W. Alton · Winnisquam · E. Tilton · Belmont · Gilman · ton · Gilmanton Iron Works · Franklin Falls · Franklin · E. Canterbury · Canter · bury · Barnstead · Pittsfield · Center Barnstead · Farming ton · Middleton · New Durham · Milton · Union · Milton Mills · Wakefield · Sanbornville · Wolfeboro Falls · Wolfeboro · S. Wolfboro · The Weirs · Winnepesaukee · Lake

Chichester · Epsom · Pembroke · Pembroke · Deerfield Center · Suncook · Raymond · Candia · Candia Village · Newfields · Fremont · Massabesic · Chester · N. London derry · Derry · E. Derry · Windham · Depot · Salem · Salem R. · Hudson · Pelham · Haverhill · Lawrence · Merrimac · Lowell · Nashua · Milford · Wilton · Lyndeboro · Reed's Ey. · Merrimack · Thorntons Ey. · Ponemah · Manchester · Goffstown · Francestown · Greenfield · Bedford · Boston · Concord · Pembroke · Hopkinton · Contoocook · Henniker · Hillsboro · Hillsboro Bridge · E. Weare · Hookset · Amoskeag · Suncook · Candia · Raymond · Epping · Pembroke · Deerfield Center · Chichester · Epsom · Strafford · Barrington · Somersworth · Rochester · Farmington · Gonic · Barrington · Northwood Ridge · Northwood · Nottingham · Durham · Dover · Dover Point · Lee · Newmarket · Greenland · Portsmouth · Rye · Rye Beach · Hampton · Hampton Falls · Seabrook · Newton · Newton Jct. · Newfields · Straham · Exeter · W. Brentwood · Kensington · Danville · Hampstead · Salem · Westville · Salisbury · Newburyport · Seabrook · Rollinsford · Salmon Falls · Rochester · E. Rochester · Sanbornville · Wakefield · Milton Mills · Union · Middleton · New Durham · Milton · Sago · Canton · Androscoggin R. · Israel R. · Androscoggin R. · Saco R. · Saco R. · Ossipee · Ossipee Lake · Ossipee Mts. · Ossipee R. · Saco R. · Ossipee · Ossipee Lake · Ossipee Mts. · Ossipee R. · Saco R.

Longitude 72° West from 71°30 Greenwich

MASSACHUSETTS · ATLANTIC OCEAN

NEW JERSEY

Scale of Miles
0 5 10 15 20 25 30

Longitude 74°30′ West from Greenwich

tions are the Hopkins Grammar School, Boardman Manual Training School, and a State normal school, etc.; there are also several learned societies, including an Academy of Science and a historical society. Pop. 133,605.

New Hebrides (heb-ri-dēz), a long chain of volcanic islands in the Pacific, lying northwest of Fiji and northeast of New Caledonia, and embracing an area of about 3000 square miles. They are extremely fertile, producing cocoanuts, sandal wood, fruits, and all manner of Polynesian produce; but the climate is rather unfavorable to Europeans. The natives are of Melanasian race. The New Hebrides have for some time been more or less a source of international difficulty between Britain and France. An agreement was at length come to that neither power should annex the group; but in 1886, apparently in violation of this agreement, French troops were landed on various pretexts, and military stations formed at various points. They eventually evacuated the islands, and a dual protectorate has been formed.

New Holland. See *Australia.*

New Iberia (ī-bē'ri-a), a town of Louisiana, capital of Iberia parish, about 100 miles W. of New Orleans. It is on the navigable Bayou Lake and ships cotton, corn, rice and sugar. There are also shipyards, knitting and other mills, and various other industries. Pop. 7499.

New Ireland (ir'land) the name of the largest of a group of islands situated east of New Guinea, in the Bismarck Archipelago, in the Pacific Ocean. The inhabitants are cannibal Papuans; the islands are volcanic, and the soil good. Called by the Germans *Neu-Mecklenburg.*

New Jersey (jer'zi), one of the eastern United States, bounded on the north by New York, east by the Atlantic Ocean and the Hudson River, south by Delaware Bay, and west by the States of Delaware and Pennsylvania, from which it is separated by the Delaware River; area, 8224 square miles. The bays of Newark, Raritan and Delaware form excellent harbors. The northwest part of the State is mountainous, being crossed by two ranges of the Appalachian chain. The middle portion of the State is agreeably diversified by hills and valleys; the southern part is level and sandy, and to a great extent barren, yielding naturally little else than scrub-oaks and yellow pine. The other portions of the state have a good soil, and produce Indian corn and other cereals, buckwheat, potatoes, etc. The fruits are good, especially apples, pears, cherries, plums and peaches. The central part of the State is the most thickly settled and is, in fact, a vast market garden for the supply of New York and Philadelphia. Large quantities of grapes and small fruits, including cranberries, are grown in the south. There are large marl deposits, from which the poor soil of the south has been largely fertilized. The climate is mild, and nowhere is the cold severely felt in winter except in the mountainous regions of the north, where the finest cattle are reared, and large quantities of butter and cheese made. This State possesses valuable iron mines, zinc mines, slate quarries, and clay banks and its fisheries are a source of great profit. New Jersey ranks high among the States in manufacturing and chemical industries, while in some industries, as silk, pottery, and glass, it stands first, although it is only eighteenth in population and forty-first in area. Glass is largely produced in the southern portion, where the necessary grade of sand abounds. The principal seat of education is the New Jersey College, Princeton, one of the principal colleges in the United States. Other important institutions are Rutgers College, New Brunswick, Stevens Institute of Technology, Hoboken, and the State normal school at Trenton. The principal towns are Trenton, the capital; Jersey City, Newark, New Brunswick, Paterson and Burlington. New Jersey was first settled by the Dutch from New York, 1614-20. It was one of the thirteen original States of the Union. Pop. 2,537,167.

New Jerusalem Church. See *Swedenborgians.*

New Kensington, a borough in Westmoreland County, Pennsylvania, 18 miles N. E. of Pittsburgh. It has manufactories of aluminum, car-springs, tin-plate, white-lead, glass, etc. Pop. 7707.

New Leon, or Nuevo Leon, a Mexican state, bounded by Cohahuila, Zacatecas, San Luis Potosi, and Tamaulipas; area, 23,637 square miles. It is mountainous but fertile, and lead, gold, silver and salt are worked; chief town, Monterey. Pop. 270,852.

New London (lun'dun), a city of Connecticut, on the Thames, 3 miles from its entrance into Long Island Sound, 50 miles E. of New Haven. The seal, cod and mackerel fisheries employ many of the inhabitants, and there are important manufacturing industries, including large woolen and sewing silk mills, shipyards, oil re-

fineries, printing presses, bed quilts, etc. The harbor is one of the best in the United States, and is defended by two forts, Fort Trumbull and Fort Griswold, Above the city, on the E. side of the river, is a United States navy yard. New London is a fashionable summer resort. It was settled in 1646, and suffered greatly at the hands of Benedict Arnold and the British in 1781. Pop. 19,659.

Newman (nū'man), FRANCIS WILLIAM, younger brother of Cardinal Newman, was born in London, in 1805, and was educated at Ealing and at Worcester College, Oxford, graduating double first (1826). He was fellow of Balliol 1826-30, when he resigned, having conscientious scruples about signing the *Thirty-nine Articles*. He was appointed classical tutor at Bristol College (1834), professor of classics at Manchester New College (1840), and professor of Latin at University College, London, 1846-63, and from that time he devoted himself exclusively to literature. His writings exhibit great scholarship and versatility. Among them are *The Soul, Its Sorrows and Aspirations* (1849); *Phases of Faith* (1850), and *Theism* (1858). Like his brother, Cardinal Newman, he diverged widely from Anglican orthodoxy, but in precisely the opposite direction. He died in 1897.

Newman, JOHN HENRY, CARDINAL, born at London in 1801, and educated at Ealing and Trinity College, Oxford, where he was graduated with classical honors (1820), and was elected fellow of Oriel College. He was vice-principal of St. Alban's Hall (1825-26) under Dr. (afterwards Archbishop) Whately, and was incumbent of St. Mary's, Oxford, and chaplain of Littlemore (1828-43). During this last period he took part with Keble and Pusey in originating the Oxford movement; was a leader in the propaganda of High Church doctrines, and contributed largely to the celebrated *Tracts for the Times*. The last of these, on the elasticity of the *Thirty-nine Articles*, was censured by the University authorities, and was followed by Newman's resignation of his livings (1843), and secession to the Church of Rome (1845). Ordained a priest of that church, he was successively head of the Oratory of St. Philip Neri at Birmingham, rector of the Roman Catholic University of Dublin (1854-58), and principal of the Roman Catholic School at Edgbaston. In 1879 he was created a cardinal. He produced some remarkable works sustaining the doctrines of the Church of Rome, particularly the *Apologia pro Vitâ suâ* (1864), and the *Reply to Mr. Gladstone* (1875) on the Vatican decrees. He died in 1890.

Newmarket (nū'-mar-ket), a town of England, partly in Cambridgeshire and partly in Suffolk, 13 miles E. N. E. of Cambridge; the chief seat of the Jockey Club, famed for its racecourse, races, and horse-training establishments. The chief races are the Two Thousand, run in April, and the Cesarewitch, run in October. Pop. 10,483.

New Mexico (nū-meks'i-kō), one of the United States, bounded on the north by Colorado, east by Texas, south by Texas and Mexico, and west by Arizona; area, 122,634 square miles. The surface is generally mountainous, being traversed from north to south by the Rocky Mountains. A central valley extends across the whole territory from north to south, with an average breadth of 20 miles, traversed by the Rio Grande, and hemmed in either by the main chain or by ramifications of the Rocky Mountains. To the south of the town of Santa Fé these average from 6000 to 8000 feet high, but in the vicinity of the town and north of it some snowy peaks rise to the height of 10,000 or 12,000 feet. The higher ranges are covered in many places with pine forests, and the lower with cedars and occasional oaks. The soil is often sandy and the rainfall is small, but irrigation has been introduced in the valleys of the Pecos and the Rio Grande, and an extensive system of water-storage is projected and partly completed, which will suffice to reclaim three or four million acres. There are many river valleys of wide fertility in which irrigation can be applied. Agriculture is rapidly increasing, wheat, oats, corn, beans, onions, cabbage and hay being among the chief crops, while many fruits, especially grapes, are grown. The mesas or table lands, occupy a large part of the surface, making stock raising and wool growing the leading occupations. There are more than 6,000,000 sheep and 1,000,000 cattle, with a large number of horses and goats. Minerals occur in abundance, there being enormous deposits of coal, part of it anthracite. Gold, silver, iron, copper and lead are all being extensively worked, the gold product annually increasing. Large mica mines are worked, and there are various other minerals of importance. New Mexico was ceded by Mexico to the United States in 1848, as a result of the Mexican war. It was created in 1850 into a territory of much more than its present extent, Arizona being cut off from it in 1863 and another portion added to Colorado in 1865. It was admitted to the Union as a state by act of Congress in 1910, subject to the

NEW MEXICO

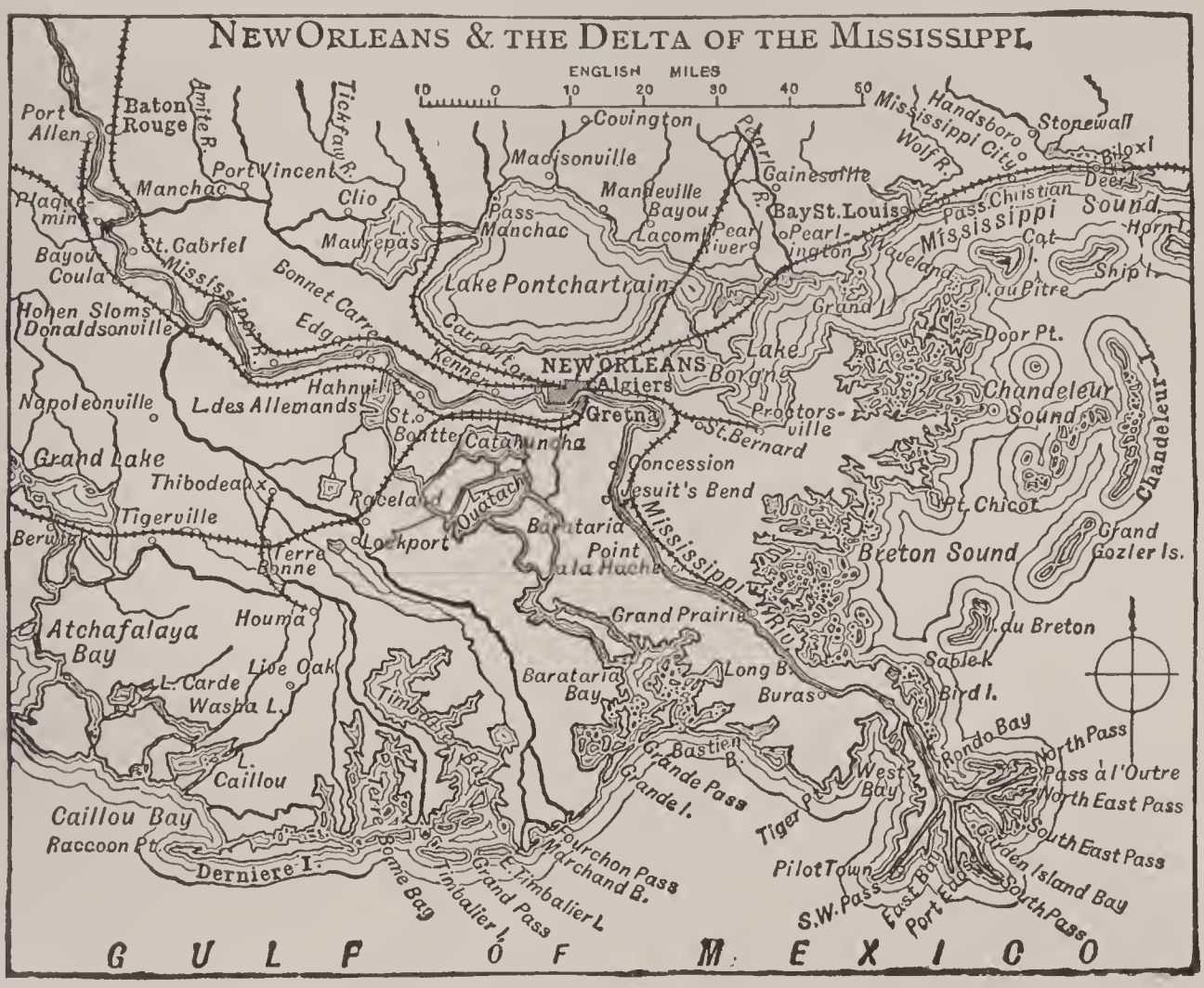
Scale of Miles
0 10 20 30 40 50 60 70 80

109° Long. West from Green, 105°

approval of its constitution by the President, which was given in January, 1912. A large number of the inhabitants are of Mexican origin. Pop. 327,301.

New Milford, a village of New Milford township (town), of Litchfield County, Connecticut, on the Housatonic River, 14 miles N. of Danbury. It has an important tobacco industry, and manufactures of hats, lime, pottery, etc. Pop. 5010.

New Orleans (nū-or'lē-anz), a city and port of Louisiana, chiefly on the left bank of the Mississippi, 115 miles above its mouth. The alluvial flat on which it stands is a mere swamp, and the town is only saved from the inundations of the river by a strong *levee* or embankment, built along the city front, and extending 200 miles above and 50 miles below, also around the city in the rear. The nucleus of the town is



Newnham College (nū'nam), an English college for the higher education of women at Cambridge, founded in 1871, and incorporated in 1880. Women are not admitted under eighteen years of age, and the course of study corresponds with that of Cambridge University, the female student being expected to prepare for a Tripos examination. There are a certain number of exhibitions and scholarships connected with the college, which is quite on the same lines as Girton.

Newnan (nū'nan), a city, capital of Coweta County, Georgia, 40 miles S. S. W. of Atlanta. It has cotton and oil mills, etc., and is a shipping point for cotton. Pop. 5548.

built around a bend of the river, from which it derives its popular sobriquet 'the Crescent City.' The streets in this portion are mostly narrow, but many of those in the suburbs are spacious and handsome, and lined with shade trees. The public buildings are neither numerous nor remarkable. The educational institutions include Tulane University, Sophia Newcomb College, a Jesuit college, an Ursuline convent, and others. There are important manufactures, including boots and shoes, iron goods, sugar, fertilizers, tobacco products, etc. New Orleans is the most important commercial city in the South and the largest cotton market in the world, with the exception of Liverpool. It is the outlet for the produce of

the countries drained by the Mississippi —sugar, molasses, rice, tobacco, Indian corn, wheat, oats, flour, and above all, cotton. Domestic trade via the Mississippi is very considerable, and in addition to the articles named there is a very large commerce in wool and hides and an extensive trade in coal, iron and lumber. Ships of the largest size can now reach the city docks. The yellow fever has often caused great mortality during the summer months; but these epidemics have been overcome by the adoption of the new methods of sanitation. New Orleans was founded in 1717, and transferred to the United States in 1803. Pop. 339,075.

New Philadelphia, a city, capital of Tuscarawas County, Ohio, on the Tuscarawas River, near the Ohio Canal, 4 miles S. of Massillon. Coal and iron ore abound here, and woolen goods, iron, steel, etc., are manufactured. Pop. 8542.

New Platonists (plā'tō-nists), a philosophical sect, so called because they founded their speculations on those of Plato; also called the *Alexandrian Platonists*, because their chief seat was at first in Alexandria. Their doctrines (Neoplatonism) had a tendency to unite Platonic ideas with Oriental mysticism, and borrowed elements from various schools. Ammonius Saccas of Alexandria was the founder of the school, and among his pupils were Longinus, Plotinus and Origen, Plotinus (born A.D. 205; died 270) being the chief and the one who contributed chiefly to settle the doctrines of New Platonism. Philosophy, according to him, should know the One which is the cause and essence of all things, the original or primitive light from which everything emanates, not by thought and reflection, but in a perfect manner by intuition, which precedes thought. Intelligence, the product and image of the One, penetrates all things; and the soul proceeds from it, as the forming thought; the soul again seeks the One, the Good, the original cause of the universe. The whole spiritual world is to be considered as one spiritual being. The sensible world is but the image of the intelligible world; time is an image of eternity, and emanates from it. Evil is either only apparent or necessary; but if necessary, it ceases to be evil. The god of Plotinus is a mystical Trinity, consisting of three Hypostases or Substances. Among the pupils of Plotinus, Porphyry and Iamblichus were the most distinguished. Athens became the seat of New Platonism, among the later New Platonists being Proclus of Constantinople.

New Plymouth (plim'uth), a town of New Zealand, in the North Island, capital of the province of Taranaki, beautifully situated on the west coast, 120 miles from Auckland. Pop. (1906) 5141.

Newport (nū'port), a municipal borough of England, in the Isle of Wight, on the Medina, which is navigable for small craft. About a mile from the town are the ruins of Carisbrooke Castle. Newport sent two members to Parliament from the reign of Elizabeth till 1867, and one member from 1867 till 1885. Pop. 11,155.

Newport, a seaport of England, in Monmouthshire, on the river Usk, 12 miles northeast of Cardiff by rail. The docks are spacious, and capable of admitting vessels of any dimensions and burden at all states of the tides. The great trade of the place is the export of manufactured iron. Shipbuilding is carried on to some extent. There are also iron foundries, sail lofts, anchor and chain cable works, etc. Pop. 83,700.

Newport, a city of Kentucky, on the Ohio River, opposite Cincinnati, of which it is practically a residential suburb. Its chief manufactures are in iron and steel, while it has also large flour mills and distilleries. Pop. 30,309.

Newport, a seaport and formerly one of the capitals of Rhode Island, now capital of Newport County, at the main entrance of Narragansett Bay, 25 miles S. by E. of Providence. It has a good harbor, easy of access and deep enough for the largest ships and defended by several forts. Newport is the most fashionable watering place in the United States, many wealthy citizens of New York, Philadelphia, Boston, and other cities having palatial residences there. Pop. 27,149.

Newport News, a seaport in Warwick County, Virginia, near the extremity of the peninsula formed by the York and James Rivers. It has extensive shipbuilding yards, large wharves and elevators, dry-docks, knitting mills, iron works, etc. It is one of the principal ports of the Southern States, has steamship lines to several European ports, and is an important coaling station.

New Providence. See *Bahama Islands.*

New Red Sandstone, the lowest group of secondary rocks, lying between the Permian below and the Lias above. See *Geology.*

New Ross, a river port of Ireland, on the Barrow, 2 miles below

its juncture with Nore, situated partly in Kilkenny but principally in Wexford County, 84 miles S. S. W. of Dublin.

New Rochelle (rō'shel), a city of Westchester County, New York, on Long Island, 18 miles N. E. of New York City, of which it is a residence town. It has many beautiful villas and a factory of druggists' scales. It was founded by Huguenot refugees from France in 1687. Pop. 28,867.

Newry (nū-ri), a parliamentary borough of Ireland, partly in county Down, partly in Armagh, finely situated on the Newry, 5 miles from where it enters Carlingford Bay, 32 miles S. S. W. of Belfast. It is a handsome, well-built town, and has flour mills and large spinning mills. Newry exports large quantities of cattle and agricultural produce to Liverpool and Glasgow. Pop. 12,405.

New Shetland (shet'land), a group of islands almost destitute of vegetation, in the Antarctic Ocean, about 600 miles S. E. of Cape Horn. They were discovered in 1819, and are sometimes visited by whalers.

New Siberia (si-bē'ri-a), a group of uninhabited islands in the Arctic Ocean, off the north coast of Siberia; area estimated at 20,000 square miles. The islands produce neither bush nor tree, but the soil contains much fossil wealth in the shape of mammoth ivory, many of these great animals having left their remains in the island soil.

New South Wales, a colony of Great Britain, which at one time comprised the eastern half of Australia, but is now bounded by Queensland on the N., Victoria on the S., the Pacific Ocean on the E., and South Australia on the W.; area, 323,437 square miles. A mountain range (the Great Dividing Chain) extends from north to south nearly parallel to the coast, at the distance of from 30 to 50 miles inland. The highest summits are Mount Kosciusko, Mount Clarke and Mount Townshend in the southeast (7353 feet), the last being the highest mountain in the colony, and in Australia. The coast line presents in general bold perpendicular cliffs of sandstone in horizontal strata, and has many indentures serving as ports. The most important rivers are on the west side of the great watershed, the chief being the Murray, the Murrumbidgee, the Lachlan and the Darling, the Murray receiving the waters of the others and carrying them to the sea through S. Australia. The Murray partly belongs also to Victoria, as it forms the boundary between the two colonies, and the Darling is therefore the most important river of New South Wales. The volume of the rivers depends greatly on the season, and their utility for inland navigation is much impaired by their shallowness. As a general rule the prevailing rock on the east side of the mountain is sandstone, and on the west granite. Much of the sandstone belongs to the Carboniferous system and is accompanied with workable seams of excellent coal. The coal fields extend over an area of 10,000,000 acres, and yield a good output. Copper ore of the richest quality has been found in great abundance, but is not yet extensively worked. Tin exists in large quantities, and iron is very generally distributed. But the chief mineral product of the colony has been gold, the total value of which hitherto obtained amounts to about $300,000,000. Silver and lead have also been found. As the area of the colony extends over eleven degrees of latitude, and as it contains a good deal of elevated ground, nearly every variety of climate is to be found. The interior plains are very dry, while the coast districts have abundant rains. The winters are mild; and though the hot winds of the warm season are annoying, they are not unhealthy, while storms and electrical disturbances are comparatively rare. The scarcity of water renders much of the surface far better adapted for pasturage than for agricultural purposes, though where the necessary moisture is present heavy crops are obtained. The agricultural land is chiefly under wheat and maize, oats and barley, and there is also a considerable area under sugar, vines, fruit trees, etc. Fruits and vegetables in great variety are grown. But the rearing of sheep and cattle is the chief employment of the people, and wool is the most important article of export. There are about 40,000,000 sheep in the colony. The exports include wool, gold coin, tin, sheep, cattle, tallow, coal, copper, etc. The imports are wearing apparel, iron goods and hardware, wine, spirits, and beer, sugar and tea, etc. The industrial works embrace tanneries, woolen factories, soap and candle works, breweries, steam sawmills, shipyards, foundries, machine works, clothing factories, etc. Sydney is the capital; other towns are Newcastle, Bathurst, Goulburn, Bramatta and Maitland. New South Wales was discovered by Captain Cook in 1770, and founded as a penal settlement (at Botany Bay) in 1788. The most important events in its history since convict immigration ceased in 1840 are the establishment of representative institutions in 1843; the erection of Victoria into a separate colony in 1850; the important discovery in May,

1851, of extensive auriferous tracts and the rush to the gold diggings with consequent great increase in population and prosperity. Among more recent events are the Sydney Exhibition held in 1879, and the Intercolonial Conference held at Sydney in 1883. New South Wales is the leading member of the Australian commonwealth, formed in 1900, sending 26 members to the House, nearly one-third of the whole. (See *Australia.*) Pop. (1906) 1,504,700.

Newspaper (nūz'pā-per), a periodical publication containing the news. Although something like an official newspaper or government gazette existed in ancient Rome, and Venice in the middle of the sixteenth century had also official news sheets, the first regular newspaper was published at Frankfort in 1615. In England no genuine newspaper of the sixteenth century has been preserved, and it is not till 1622 that we find *The Weekly News from Italy, Germany*, etc., which may be regarded as the first specimen of the regular newspaper that appeared in England. Other journals followed, and one of these, published in November, 1641, under the title of *Diurnal Occurrences, or the Heads of Several Proceedings in Both Houses of Parliament*, is noticeable as the first which furnished a report of the proceedings in Parliament. The oldest existing newspaper in England is the government paper, the *London Gazette*, the first number of which was issued on November 7, 1655, at Oxford, whither the court had retired in consequence of the plague then raging in London. It has since been uninterruptedly published twice a week for more than two centuries. The first London daily paper was published in 1709 under the name of the *Daily Courant.* Among the journals of the eighteenth century may be noticed more especially the *Public Advertiser*, which first appeared in 1726, and became afterwards so celebrated by the publication in it of the famous *Letters of Junius.* The *Morning Chronicle* appeared in 1769, and the *Morning Post* in 1772. The latter is still flourishing; the former lasted over ninety years. The *Times* was first commenced on January 18, 1785, under the name of the *London Daily Universal Register*, which was afterwards superseded by that of the *Times* on January 1, 1788. From the establishment of the *Times* scarcely any attempt to start a daily paper in London for a long time succeeded, with the exception of the *Morning Advertiser* (1794). During the nineteenth century large numbers of newspapers were established.

One of the earliest English local papers was the Norwich *Postman*, published in 1706 at the charge of a penny, but 'a half-penny not refused'; and followed by the *Norwich Courant* in 1714, and the *Weekly Mercury*, or *Protestant's Packet* (also at Norwich, and still in existence), in 1720. The *Worcester Postman* appeared in 1708, and the *Leeds Mercury* in 1718.

It is interesting to find that the American colonies were not far behind the mother country in establishing newspapers, and equally interesting to know that the most remarkable development of the newspaper has been in the United States, where, in proportion to population, its growth and influence has been much greater than in any other country. In Colonial times the first newspaper to appear was on September 25, 1690, when Benjamin Harris published, in Boston, *Publick Occurrences, both Foreign and Domestick*, a proposed monthly which, however, never got beyond its first issue, being suppressed by the authorities. In 1696 a reprint of *The London Gazette* was issued in New York. The postmaster at Boston, John Campbell, gathered and distributed the news by means of a circular, which he sent to a few friends and the New England governors. This led on April 24, 1704, to the publication of the *News-Letter*, now recognized as the first newspaper published in America. This was printed on a sheet of foolscap, on one side only. It ceased in 1776. December 21, 1719, appeared *The Boston Gazette;* on the day following *The American Weekly Mercury* made its initial bow in Philadelphia. James Franklin established in Boston, *The New England Courant*, in 1721, and it was on this journal that Benjamin Franklin served as printer's apprentice. This paper was so free and independent that it aroused the people of sleepy Boston, and the proprietor was thrown into jail. Then Benjamin Franklin, at that time (February 11, 1722), only sixteen years of age, took charge as editor and publisher. In October, 1725, *The New York Gazette* appeared, being the first to be published in that province. In succession followed: *The New England Weekly Journal* (1727); *The Maryland Gazette*, the same year; *The Universal Instructor in All the Arts and Sciences and Pennsylvania Gazette* (1728), soon after purchased by Benjamin Franklin, who abbreviated its title to *The Pennsylvania Gazette; The South Carolina Gazette* (1731); *The New York Weekly Journal* (1733); *The Virginia Gazette* (1736). It will appear from this list that the colonies closely rivaled England in

this field of enterprise. Ante-Revolutionary years brought forth a great increase in the number and energy of the press, the restlessness of the country demanding vent and finding it therein. In opposing the Stamp Act of 1765 the patriotic press had an enormous influence in the colonies. At this time all the newspapers were weekly, monthly or published 'every little while.' It was not until 1784 that the first daily appeared, this being *The American Daily Advertiser*, published in Philadelphia by Claypoole, who first introduced reporting on this continent. This was the commencement of the era of newspaperdom as it at present exists in the United States.

Up to 1833 the American newspapers were distributed almost solely by subscription, at a price which at the present time would appear very high, especially in view of the meager news and the small size of the sheets. There were no street sales, no news stands, and but few were retailed at the offices. In 1835 no paper had a circulation of 5000, and very few even half that number. The *Morning Post*, New York, 1833, was the first penny paper; it lived but three weeks.

Benjamin Day issued *The Sun*, September 3, 1833, at one cent per copy. It gained a large circulation, and in 1867 came under the direction of Charles A. Dana, being then published at two cents. About two years later James Gordon Bennett established *The New York Herald*, which became a power in the land. At a later period, with *The London Telegraph*, it equipped an expedition in search of Livingstone, the famous African explorer and missionary. The *New York Tribune* was founded by Horace Greeley on April 10, 1841; at its outset this was a penny paper. It also, soon after commencing, issued weekly and semiweekly editions. In September, 1851, *The New York Times* was established by H. J. Raymond. June 1, 1860, *The New York World* was started by a number of persons as a newspaper which should contain no police reports, theatrical notices or debasing advertisements. Since these dates the sizes of American newspapers have very greatly increased, the cost of publication having similarly augmented, so that the circulation must necessarily be great and the advertising receipts immense to repay such cost.

We have so far named only the early New York newspaper enterprises, but the great distances in America, the excellent telegraph service, and the aid of the several press associations have stimulated the growth of first-class newspapers in every large city and Philadelphia, Chicago, Boston, Cincinnati, St. Louis, New Orleans, San Francisco, Baltimore and other large cities have long possessed strong, enterprising and reliable journals, equaling or exceeding those of New York, in expenditure, circulation and influence. In this class are *The Public Ledger*, *Record*, *Telegraph*, *Press*, *North American*, *Inquirer* and *Bulletin*, in Philadelphia; in Chicago, the *Tribune*, *Herald*, *Inter Ocean*, *News*, *Times*, etc.; in St. Louis, *The Globe-Democrat* and *Republic;* in Baltimore, *The Sun* and *Herald;* in Cincinnati, *The Commercial Gazette* and *Enquirer;* in New Orleans, *The Times-Democrat* and *Picayune;* in San Francisco, the *Chronicle*, *Examiner*, *Bulletin* and *Call;* in Boston, the *Globe*, *Post* and *Herald*. Beside this nearly every town and county in the United States has one or more daily or weekly newspapers. The first illustrated daily was *The Daily Graphic*, but it proved too expensive, and died in 1888, after a few years' precarious existence. Since then the illustrating of the dailies has become a common feature. Every trade, organization, profession and science now has its representative journal or journals, there are numerous weeklies of literary character, or devoted to science, art, religious or other fields of thought, and Solomon's remark might be paraphrased to read: 'To the making of newspapers there is no end.' The great and rapid presses of recent years, the methods of mechanical type-setting, and the cheapness and excellence of photographic illustrations, have been necessary elements of the great sheets and enormous circulations of the present day, and the twentieth century newspaper is one of the greatest achievements in the whole field of human enterprise.

New Style. See *Calendar*.

Newt (nūt), or EFT, the popular name applied to various genera of amphibians included in the order Urodela ('tailed') of that class. Water-newts, or 'water-salamanders' as they are sometimes termed, possess a compressed tail, adapted for swimming. These forms are oviparous, and though aquatic in their habits they are yet strict air-breathers. The larval gills are cast off on maturity being reached, or about the third month of existence. The larval tail is retained throughout life. The male animals are distinguished by the possession of a crest or fleshy ridge bone on the back. The food consists chiefly of aquatic insects, larvæ, etc. The *Triton cristātus*, or great water-newt, is about

6 inches in length; the *Triton aquaticus* averages about 3 inches; and both are common in fresh water pools and ponds in Britain. The land-newts are included under the genus *Salamandra*. The tail is of rounded or cylindrical form, and is

Great Water-newt (*Triton cristatus*).

therefore not adapted for swimming. The land-newts possess cutaneous glands which secrete a fluid of watery nature; and the popular superstition that if put on a fire these creatures were able to extinguish the flames may have taken origin from the abundant secretion of these glands. *Salamandra maculōsa* of Southern Europe is a familiar species, as also is the *S. alpīna* found inhabiting mountainous situations. These forms possess the power of reproducing lost or mutilated toes or even limbs. The newt is quite harmless.

New Testament. See *Bible*.

Newton (nū'tun), a city of Kansas, capital of Harvey County, 27 miles N. of Wichita. It is the seat of Bethel College, and has flour mills, creameries, a grain drill and an ice factory, and railroad shops of the Atchison, Topeka & Santa Fé Railroad. Pop. 7862.

Newton, a city of Middlesex County, Massachusetts, adjoining Boston on the S. W., and a favorite place of residence for Boston merchants. It is the seat of a Baptist theological institute, and the Lasell Seminary for women, and has numerous manufactures, embracing cotton, worsteds, hosiery, machinery, pianos, starch, paper, silk, etc. Pop. 39,806.

Newton, Hubert Anson, mathematician, born at Sherburne, New York, in 1830; died in 1896. He was graduated at Yale in 1850, became tutor there in 1853, and professor of mathematics in 1856, filling this position till his death. He became notable for his researches and discoveries regarding the laws governing comets and meteors. In this field he is regarded as the highest authority. He was an editor of the *American Journal of Science*, and was active in founding the National Academy of Science, of which he was a member for life.

Newton, Sir Isaac, the most distinguished mathematician of modern times, was born at Woolsthorpe, Lincolnshire, in 1642, being the son of Isaac Newton, farmer and proprietor of the manor of Woolsthorpe. He was sent at an early age to the village school, and in his twelfth year to the town of Grantham, where he remained till he was entered at Trinity College, Cambridge, in 1660. In 1663-64 he discovered the formula known as *Newton's Binomial Theorem* (see Binomial); and before 1665 he had established his doctrine of fluxions. Some years later Leibnitz also discovered this invaluable method, and presented it to the world in a different form —that of the differential calculus. About this time (1665), being obliged to quit Cambridge on account of the plague, he retired to Woolsthorpe, where the idea of universal gravitation is said to have first presented itself to him, from observing the fall of an apple in his garden. This, however, is legendary and without foun-

Sir Isaac Newton.

dation in fact. In 1666 he returned to Cambridge, was chosen fellow of his college (Trinity College) in 1667, and the next year was admitted A. M. By this time his attention had been drawn to the phenomena of the refraction of light through prisms, and to the improvement of telescopes. His experiments led him to conclude that light is not a simple homogeneous substance, but that it is composed of a number of rays of unequal refrangibility, and possessing different colors. In 1669, being appointed profes-

sor of mathematics at Cambridge, and preparing to lecture on optics, he endeavored to mature his first results, and composed a treatise on the subject. In 1672 Newton was chosen a fellow of the Royal Society, to which he communicated a description of a new arrangement for reflecting telescopes, which rendered them more convenient by diminishing their length without weakening their magnifying powers; and soon after, the first part of his labors on the analysis of light. This led him into controversies with Hooke, Huygens, and several eminent foreigners, Newton maintaining the corpuscular theory, now generally given up in favor of the undulatory theory. In 1675 he addressed another paper to the Royal Society, completing the account of his results and of his views on the nature of light. This treatise, united with his first paper on the analysis of light, afterwards served as the base of the great work, *Treatise on Optics* (1704). He had before this deduced from the laws of Kepler the important law that gravity decreased with the square of the distance, a law to which Sir Christopher Wren, Halley and Hooke had all been led by independent study. No demonstration of it, however, had been given, and no proof obtained that the same power which causes subjects to fall to the earth was that which retained the moon and other planets in their orbits. Adopting the ordinary measure of the earth's radius, Newton had been led to the conclusion that the force which kept the moon in her orbit, if the same as gravity, was one-sixth greater than that which is actually observed, a result which perplexed him, and prevented him from communicating to his friends the great speculation in which he was engaged. In June, 1682, however, he had heard of Picard's more accurate measure of the earth's diameter, and repeating with this measure his former calculations, he found, to his extreme delight, that the force of gravity, by which bodies fall at the earth's surface, 4000 miles from the earth's center, when diminished as the square of 240,000 miles, the moon's distance, was almost exactly equal to that which kept the moon in her orbit. Hence it followed that the same power retained all the other satellites round their primaries and all the primaries round the sun. Two years were spent in penetrating the consequences of this discovery, and in preparing his immortal work, *Philosophiæ Naturalis Principia Mathematica*, commonly called 'Newton's Principia,' which was printed in 1687 at the expense of Dr. Halley. In 1687 Newton was one of the delegates sent by the University of Cambridge to maintain its rights before the High Commission Court when they were attacked by James II, and in 1688 he was elected by the university to the Convention Parliament. In 1696 he was appointed warden of the mint, and in 1699 master. In 1701 he was again returned to parliament by his university; in 1703 he was chosen president of the Royal Society; and in 1705 was knighted by Queen Anne. In his later years he took great interest in chemistry and in the elucidation of the sacred Scriptures. His health was good until his eightieth year, when he suffered from a calculous disorder, which occasioned his death in 1727. He was interred in Westminster Abbey. The most important of Newton's philosophical works are his *Principia;* his *Arithmetica Universalis;* his *Geometria Analytica;* and his *Treatise on Optics.*

Newton, JOHN, an English divine, born in London in 1725; died there in 1807. When eleven years old he was taken to sea by his father, then master of a ship in the Mediterranean trade. His subsequent life was of a rather irregular description until his thirtieth year, when he resolved to qualify himself for holy orders. He was ordained to the curacy of Olney, in Buckinghamshire, in 1764. During his incumbency at Olney he became acquainted with the poet Cowper, who contributed sixty-eight hymns to the collection published by Newton in 1776, and known as the *Olney Hymns.* In 1779 Newton was presented to the living of the united parishes of St. Mary Woolnoth and St. Mary Woolchurch Haw, London, and held it till his death. His best-known works are his *Autobiography* (1764), a *Review of Ecclesiastical History* (1770), and the *Olney Hymns.*

Newton, JOHN, soldier, was born in Virginia in 1823. He was graduated from West Point in 1842, and followed the career of a military and civil engineer. He served with great distinction during the war for the Union, after which he was employed in strengthening New York harbor. It was he who planned and carried out (1876) the removal of the Hell Gate obstruction to navigation in the East River. He was made brigadier-general in 1884 and retired in 1886. In 1887-88 he was Commissioner of Public Works of New York, and in the latter year became president of the Panama railroad. He died in 1895.

Newton-in-Makerfield, or NEWTON-LE-

WILLOWS, a town of England, in Lancashire, 15 miles east by north of Liverpool. The manufactures include paper works, glass works, a large iron foundry, and a sugar refinery, besides an establishment for the manufacture of trucks for the London & North-Western Railway. Pop. 18,462.

Newton's Laws of Motion. See *Dynamics.*

Newtown (nū'toun), a borough and market town of North Wales, County Montgomery, on the Severn. It has an ancient church (now in ruins) in the early English style. It is the chief seat of the Welsh flannel manufacture, which, however, is now falling off considerably, and being superseded by the manufacture of tweeds, shawls, etc. Pop. 5929.

Newtown, a town of New South Wales, forming a suburb of Sydney, but under distinct municipal government since 1862. It is connected with the city by railroad. With Sydney merchants it is much in favor as a place of residence. Pop. (1901) 22,598.

Newtownards (nū-toun-ârdz'), a town of Ireland, County Down, at the north extremity of Lough Strangford, 9 miles east of Belfast. It consists chiefly of a handsome square, and several streets leading into it. Pop. 9110.

New Ulm, a city, capital of Brown County, Minnesota, on the Minnesota River, 88 miles S. W. of Minneapolis. It has breweries and manufactures of iron, organs, woolens, flour, sash, doors, etc. Pop. 5648.

New Westminster (west' minstêr), a city of British Columbia, on the Fraser River, about 15 miles from its mouth, and near the western terminus of the Canadian Pacific Railway, and also connected by a short line with the United States railway system. It is the headquarters of the foreign and river traffic of the province. Chief industry, salmon canning. Pop. (1911) 13,199.

New Whatcom (hwot'kun), a former city and capital of Whatcom County, Washington, on E. shore of Bellingham Bay, 73 miles N. of Seattle, and on the Great Northern and Northern Pacific railroads. It has large fishing and canning interests, ships hops, coal and lumber, and has woodworking factories, machine shops, etc. Pop. in 1900, 6834. Since the date of this census, New Whatcom has united with Fairhaven, etc., to form the present city of Bellingham.

New Year's Day, the first day of the year from the earliest times observed with religious ceremonies or festive rejoicing. New Year's Day, being the eighth day after Christmas, is the festival of Christ's circumcision. The day is a holiday, celebrated with religious service all over the European continent, though not generally in Britain nor in the United States.

New York (nū-york'), 'the Empire State,' one of the thirteen original United States of North America, having Canada on the north and northwest, from which it is almost entirely separated by the St. Lawrence, Lake Ontario, the Niagara River and Lake Erie; south, Pennsylvania, New Jersey, and the Atlantic; and east, Connecticut, Massachusetts and Vermont. Long Island belongs to the State, whose seaboard otherwise is very small. Total area, 49,204 square miles. The surface in the southeast is traversed by several mountain ranges from New Jersey, one of which, crossing the Hudson, presents a bold and lofty front on both banks, and forms magnificent scenery. The Catskill Mountains have the greatest average height, and in Round Top attain 3800 feet; but the culminating point is Mount Marcy, which belongs to the Adirondack group, and has a height of 5467 feet. In the west the large tract extending between Lake Ontario on the north and Pennsylvania on the south is generally level. The principal rivers are the Hudson, Delaware, Susquehanna, Mohawk, Oswego, Genesee, Niagara, Allegheny and St. Lawrence. The falls of Niagara partly belong to the State. Besides the frontier lakes Ontario and Erie, there are many lakes of very considerable size, such as Lakes Champlain, George, Oneida, Cayuga, Seneca, etc. The climate is somewhat variable, but with some local exceptions very healthy. The greater part of the soil is arable, and some of it extremely fertile, and New York occupies a foremost place in agriculture. The largest crops are oats, corn and potatoes, also wheat, barley, hops and grapes, and other fruits. The mountain districts are mainly good grazing land and much attention is paid to the rearing of stock, both for feeding and for dairy purposes, more milk being produced than in all other states of the Union combined, and more butter and cheese than in any other state. The forest trees present a great variety, but the forest area, which used to include nearly half the State, has been much reduced of late years. The lake and ocean fisheries are of great value,

NEW YORK

Scale of Miles
0 10 20 30 40 50 60

SOUTHERN PORTION OF NEW YORK
Same Scale as Main Map

Longitude West from Greenwich

Copyright by F. W. Woolworth.

THE TALLEST BUILDING IN THE WORLD

The new Woolworth Building, New York. The tower is 750 feet high.

an important part of them being the utilizing of fish for oil and fertilizers. The most important mineral is iron. Lead ore is also found, and a vast amount of salt is made from the salt springs. Granite, marbles, sandstones, limestones, clay, sand, and all building materials are abundant. The mineral springs of Saratoga are the most celebrated in America. The manufactures surpass in value those of any other State. The foreign and internal trade are of great importance. The latter is carried on chiefly by canals and railroads in conjunction with the Hudson. Of the canals the most important is the Erie Canal, which connects Lake Erie with the Hudson. (See *Erie Canal.*) The length of railways is over 8400 miles. For the higher branches of education ample provision has been made, there being some thirty universities and colleges, and primary education is free. Albany is the capital. The territory of New York was partially explored in 1609 by Henry Hudson, an English navigator in the service of the Dutch East India Company, and soon after was colonized by the Dutch, who were expelled by the English in 1674. During the war with the French the country was laid almost desolate by the ravages of war and the incursions of Indians. In the Revolutionary war many important events took place in New York territory. The first State constitution was adopted in 1777. It is the leading State in population and wealth. Pop. 9,113,614.

New York, the chief city and seaport of the State of New York and of the United States, and in respect of population and commerce the metropolis of the American continent and the second city of the world. The city is admirably situated at the confluence of the Hudson River from the north, and the East River from the northeast (the latter a prolongation of Long Island Sound), their united waters expanding into New York Bay, which forms a magnificent harbor. The approach from the sea is either by the East River and Long Island Sound, or by the wide channel between Sandy Hook and Long Island, and thence by 'the Narrows' between Staten Island and Long Island. In the bay are several islands, on some of which are forts, and on one is a colossal statue of Liberty. The city consists of five Boroughs: Bronx, Brooklyn, Manhattan, Richmond and Queens. (*Which see*). It was incorporated January 1, 1898, the city formerly being on Manhattan Island, but after that date embracing the adjoining cities and districts. The building material is stone of varying shades and qualities and red, yellow and white bricks, the artistic and substantial architecture being of an excellent character.

General Features.—The plan upon which the newer part of the old city is laid out consists of parallel *avenues*, 100 feet or more in width, named numerically from *first* to *eleventh*, and running from south to north as far as the northern extremity of Manhattan Island, intersected at right angles by *streets* also numerically named, and crossing the city from east to west. Fifth Avenue (7 miles long, 100 feet wide) is the great central avenue, and all the streets running east from it have the prefix *east*, and those running west the prefix *west*, and the houses are numbered accordingly. Fifth Avenue is *par excellence* the fashionable and aristocratic street. The main business thoroughfare is Broadway (15 miles long and 80 feet wide), which in the activity and variety of its traffic, the elegance of its shops, and the massiveness and grandeur of many of its public and private buildings, is one of the most interesting streets in the world. Madison Avenue, next east of Fifth Avenue, vies with it as a street of costly private houses and beautiful churches. The streets in general are excellently paved, and the cleansing of them is well attended to. They are traversed in all directions by electric surface cars, supplemented by elevated railroads with electric trains giving a speed of 15 miles per hour and by a great 'subway,' or underground railway, which traverses the whole length of Manhattan Island and connects with Brooklyn and Jersey City by tunnels under the East and North, or Hudson, rivers. This is one of the most extensive pieces of municipal engineering ever undertaken in the United States. Steps have been taken to supplement it by other subways, in order to relieve the pressure of travel. A parallel example of daring engineering is an immense tunnel and subway constructed under the city and the Hudson and East Rivers by the Pennsylvania Railroad Co., and opened to travel in 1910, which enables trains to land their passengers in the center of the city without aid from the ferries and to pass under water and land from New Jersey to Long Island. It is the most magnificent example extant of recent railroad engineering. A bridge across Harlem River and a massive viaduct take the trains of the great railroads running to the east, north and northwest to the Grand Central Depot, in the heart of the city. Several splendid

suspension bridges, the largest existing, cross the East River from Manhattan to Long Island, and numerous ferry boats ply on the two rivers. Of the public parks the oldest and best known is Central Park, situated near the center of Manhattan Island. It is 2½ miles long and a little over half a mile wide, giving an area of 840 acres, which have been converted into a beautiful and much frequented pleasure ground. In the newer section of the city, to the northward, a number of large parks have been laid out (Bronx, Van Cortland, Crotona and Pelham Bay). Prospect Park, Brooklyn, contains 526 acres, and there are many smaller parks, squares and boulevards for public use. Bronx Park contains a large zoölogical garden, and the old Battery, at the southern extremity of Manhattan, contains an attractive aquarium, abundantly supplied with sea and river fishes.

The school system is well developed, and among the institutions for higher education are Columbia University (founded as King's College in 1754); New York University, founded in 1831; the Normal College, for young women; the Cooper Union, and a number of medical, theological, and other educational institutions. There may be named also the Metropolitan Museum of Art, rich in paintings, antiquities, etc.; the American Museum of Natural History, equally rich in its collections; the National Academy of Design, and numerous other scientific, artistic, and other institutions.

The New York Public Library, constructed in 1895 by the union of the Astor, Lenox and Tilden foundations, is seated in a magnificent new building. The New York Free Circulating Library was later added, the total collections numbering considerably more than 1,000,000 volumes. In addition there are numerous other public and private libraries, among the latter being the large library of Columbia University. Among the monuments are statues of Washington, Lincoln, Farragut, Franklin, Shakespere, Burns, Scott, etc., an ancient Egyptian obelisk presented by the Khedive of Egypt; Bartholdi's great statue of Liberty already referred to (see *Colossus*), etc. New York is abundantly supplied with theaters, opera houses and other places of amusement, with large hotels, and with many massive and attractive public and municipal buildings, far too numerous to mention here.

Trade, etc.—New York is primarily a commercial city and a center of distribution of domestic and foreign products, but it is also the center of a vast manufacturing interest. The industries, however, are rather of a varied character than individually important, the chief being connected with clothing, meat packing, printing and publishing, brewing, etc. Its commerce is enormous, it rivaling London and surpassing all other cities in this respect. Its total trade, exports and imports, approaches in value $2,000,000,000 annually. Immense numbers of immigrants from Europe arrive here. The water supply is furnished from Croton Lake, an artificial reservoir supplied by Croton River, from which the water is conveyed by an aqueduct of stone masonry of a capacity of over 300,000,000 gallons per day a distance of 40 miles to New York. A larger reservoir is being constructed in the Catskill Mountain region, 90 miles north of the city, which is expected to be capable of supplying 500,000,000 gallons a day even in dry years.

History.—Manhattan Island was first visited in 1609 by Henry Hudson. It was first settled three years after on the southern extremity. The Dutch settlement here formed gradually grew into a town named New Amsterdam, which in 1648 had 1000 inhabitants. In 1664 it surrendered to the British, and took its new name from the Duke of York, into whose hands it came. In 1673 the Dutch regained possession, but lost it finally in the following year. New York was taken from the Americans by the British at the beginning of the war of Independence (August 26, 1776), and held by them till its close (evacuated November 25, 1783). It was the capital of the State of New York from 1784 to 1797, and from 1785 to 1790 it was the seat of the Federal government, and at New York Washington was inaugurated to the presidency in 1789. During the war of 1812-15 its foreign commerce was almost annihilated. The first regular line of packet ships to Liverpool was started in 1817. The opening of the Erie Canal in 1825 gave the city a preëminent command of internal commerce. Since that date its progress has been rapid, almost beyond example. Pop. in 1850, 515,547; in 1870, 942,292; in 1880, 1,206,600; in 1890, 1,800,891; 1900, 3,437,202; 1910, 4,766,883.

New Zealand (zē'land), a group of islands belonging to Great Britain in the South Pacific Ocean, consisting chiefly of two large islands, called North and South (or Middle) Island, and a third of comparatively insignificant size, Stewart Island; length of the group, north to south, measured on a line curving nearly through their centers, about 1200 miles; area, 105,340

SINGER BUILDING

METROPOLITAN BUILDING

Two of the tallest buildings in the world. Singer Tower is 612 feet 1 inch high, and the Metropolitan Tower is 700 feet 3 inches high.

square miles (or 15,000 less than the United Kingdom). Previous to 1876 New Zealand was divided into nine provinces, four in the North Island (Auckland, Taranaki, Wellington and Hawke's Bay) and five in the South Island (Nelson, Marlborough, Canterbury, Otago and Westland); but in 1876 the provinces as such were abolished, though the names are still in common use, and the whole of New Zealand is now divided into 63 counties. Pop. 900,000, including 43,143 Maoris and 2857 Chinese. Capital, Wellington, in North Island; other chief cities: Dunedin, Auckland, Christchurch.

North Island, the most northern of the group, and separated from South Island by Cook's Strait, which, where narrowest, is about 25 miles wide, is very irregular in shape, and much broken by deep bays and projecting headlands. Its area is estimated at 44,736 square miles. It consists of a main body with projections running east, south, and west, and a long narrow projection 280 miles in length, which stretches north with a curve in a westerly direction. The main body of the island, as well as its peninsulas, has for the most part a very rugged and mountainous surface; and besides being traversed from south to north by chains of mountains reaching a height of 6000 feet, presents a number of lofty isolated volcanic peaks, among which the most conspicuous are Tongariro (6500 feet) occasionally active, and Ruapehu (9195 feet) and Mount Egmont (8300 feet), extinct volcanoes. The coast line of North Island contains many excellent natural harbors, especially those of Wellington on Cook's Strait, and of Auckland on the isthmus of the northern projection. The streams are extremely numerous, but are mostly mere torrents, which bring down immense deposits of shingle. The largest of the rivers are the Waikato (200 miles) and the Wanganui (about 120). Most of the streams have their sources in lakes embosomed among mountains covered with magnificent forests, and presenting scenes of extraordinary beauty. The largest of all the lakes is Taupo, situated near the center of the island, about 36 miles long by 25 miles broad. To the northeast occur a number of lakes, familiarly known as the 'Hot Lakes,' there being here hot springs and other volcanic phenomena. In this region there is much remarkable scenery, but the most interesting features, known as the Pink and White Terraces, were destroyed by a volcanic eruption in June, 1886.

South Island is of a much more compact and regular form, and may be considered as a parallelogram; area, about 55,225 square miles. With exception of the north coast, the southwest coast, and a remarkable spur on the east coast called Banks' Peninsula, the coast line is very continuous. On the north coast, from Cape Farewell to Cape Campbell, are numerous good harbors; in the southwest are a series of narrow fiords. South Island is traversed from north to south by a lofty central mountain chain, which has an average height of about 8000 feet; while Mount Cook, near the west coast, the culminating point of New Zealand, is 13,200 feet high. Among these mountains are fields of perpetual snow, and glaciers of great size, stretching down on the southwest to no great distance from the sea. Along the east coast several extensive plains exist. The largest river is the Clutha, which has a course of 150 miles, and enters the sea near the southeast angle of the island. There is some magnificent lake scenery. The largest lakes are Wakatipu and Te Anau, covering 114 and 132 square miles respectively. *Stewart Island* is separated from South Island by Foveaux Strait, about 15 miles wide. It is of a triangular form, with an area estimated at 1300 square miles. A great number of smaller islands belong to the New Zealand group. The Chatham Islands and Kermadec Islands are outlying dependencies.

Minerals, Climate, Natural Productions.—With mineral wealth New Zealand is liberally supplied. Coal is obtained in many parts, and copper has been worked on a small scale. Gold is worked both in North and South Island. Extending through 12° of latitude, and having a greatly diversified surface, New Zealand has necessarily a very varied though a remarkably healthy climate. In temperature it resembles France and North Italy, but the humidity is considerably greater. Rapid changes are a notable feature of the weather. Among vegetable productions the most characteristic are the ferns (130 different species), which form almost the only vegetation over immense districts. Some of them are more than 30 feet high, and remarkable for the elegance of their forms. One of the most common is the *Pteris esculenta*, the root of which is used as food by the natives and greedily devoured by pigs. Another remarkable plant of great economical value (even furnishing an article of export) is the flax-plant (*Phormium tenax*). A number of the forest trees furnish valuable timber. Among others is the kauri or damar pine. Flowering plants are remarkably scarce, and

there are no indigenous fruits. The soil and climate of New Zealand, however, produce in perfection every English grain, grass, fruit, and vegetable. In the gardens of the warmer valleys fruits of a semitropical character—the pomegranate, citron, orange and olive—might be raised. In animals New Zealand is singularly deficient, only a sort of dog (now extinct), a rat, and two species of bats being indigenous. Rabbits have been introduced and have multiplied so as to become a perfect pest; pigs now run wild as well as cats. Pheasants, partridges, quails and red and fallow deer have also been successfully introduced. All the common European quadrupeds appear to be easily acclimatized. The native birds are remarkable neither for numbers nor for beauty of plumage. Pigeons and parrots are the most common. The apteryx, a peculiar bird so called from having no wings, is one of the most remarkable of the native birds. Among others are the huia or parson-bird and the owl-parrot. The gigantic moa is now extinct. The chief reptiles are a few lizards. The coast teems with fish, and seals are still numerous in some parts.

Aborigines.—The original natives of New Zealand, called Maoris, a people of Polynesian origin, are supposed to have emigrated from the Navigators' or the Sandwich Islands some centuries ago. Split up into numerous petty tribes, and wasting each other by internecine feuds, their numbers have been so reduced that they do not now much exceed 40,000, all of whom, with the exception of a few hundreds, are located in the North Island. By missionary efforts a great part of them have been converted to Christianity. They have acquired in many instances considerable property in stock, cultivated lands, etc., and in the neighborhood of the settlements they are adopting European dress and habits.

Industry, Commerce, etc.—Stock-rearing and agriculture are the most important industries, though mining is also an important occupation. There are about 20,000,000 sheep in the colony, and by far the most important export is wool, frozen meat and grain being also largely exported. Gold is the most valuable export next to wool; others are tallow, timber, kauri-gum. The imports naturally are chiefly manufactured goods: drapery, ironmongery, machinery, etc.; also tea, sugar, spirits, etc. There are upwards of 2500 miles of government railway in New Zealand open for traffic.

History.—New Zealand was first discovered by Tasman in 1642, but little was known of it till the visits of Cook in 1769 and 1774. The first permanent settlement was made by missionaries in 1815, but no regular authority was established by the British government till 1833, when a resident was appointed, with limited powers, and subordinate to the government of New South Wales. In 1840 New Zealand was erected into a colony; in 1841 it was formally separated from New South Wales and placed under its own independent governor; and in 1852 it received a constitution and responsible government. Troubles with the natives of the North Island about land have given rise to frequent Maori wars, and so late as 1886 a disturbance about land arose. In 1865 the seat of government was removed from Auckland to Wellington. In 1873 the Public Works Policy was inaugurated, and large loans were raised for immigration, harbors, railways, roads, etc. In 1876 the provinces were abolished, the colony was divided into 63 counties, and all government centralized at Wellington. It is the most Socialistic of countries; has compulsory arbitration of labor disputes, free transportation for scholars, etc.

New Zealand Flax. See *Flax (New Zealand)*.

New Zealand Spinage (*Tretragonia expansa*), a succulent trailing plant inhabiting New Zealand, Tasmania, Australia, South America and Japan. It has been introduced into Europe and North America as a substitute for spinage.

Ney (nā), Michel, Duke of Elchingen, Prince of the Moskwa, marshal and peer of France, was born in 1769 at Sarre-Louis, in the department of the Moselle. He entered the military service in 1788 as a private hussar, and rose by degrees to the rank of captain in 1794, adjutant-general in 1796, general of division in 1798, and as such he distinguished himself in the Rhine campaign. Appointed marshal of the empire by Napoleon in 1805, he achieved victory over the Austrians at Elchingen, and took part in the battle of Jena. During the Russian campaign he commanded the third division at the battle of the Moskwa, and conducted the rear guard in the disastrous retreat. In the campaign of 1813 his skill and courage decided the victory of Lützen, and assisted at Bautzen and Dresden. When Napoleon abdicated and the Bourbon dynasty was established Ney took the oath of allegiance to the king and received a command; but when the emperor landed from Elba his old general joined him at Lyons and opened the way to Paris. In

Reproduced by permission of The Philadelphia Museums.

NIAGARA FALLS IN WINTER

The spray from the falls freezing on the rocks forms a weird and beautiful spectacle.

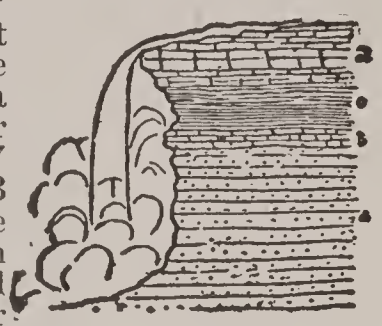
the campaign which followed it was Ney who led the attack on the British center at Waterloo, and after five horses had been killed under him he only retired from the field at nightfall. When the allies entered Paris he escaped in disguise to the provinces, but was finally arrested, brought back to Paris, tried for treason, and found guilty. The sentence was executed December 7, 1815.

Nez Perces (nez pers), a tribe of Indians, chiefly settled in Idaho, on the Lapwai River. The Nez Perces proper were loyal to the whites, but in 1877 the treaty reductions of their reservation led to a sanguinary outbreak on the part of the non-treaty members of the tribe, who attacked settlers, fought the soldiers, and then fled across Idaho, Montana and Dakota. They were overtaken and beaten, and the survivors (some 350) transferred to the Indian Territory. In 1885 some were restored to Idaho, and the rest joined the Colville Indians, in Washington.

Ngami (n'gä'mē), a former South African lake to the north of the Kalahari Desert; length about 37 miles, breadth about 15 miles. Its only feeder is the Teoge, and its outlet the Zouga. Ngami was first visited by Dr. Livingstone and Mr. Oswell in 1849. It was for the most part shallow, and has now practically disappeared, its place being taken by a reed-grown muck.

Nganhwuy (ngân-hwī'), a province of China, bounded by the provices of Kiangsu, Honan, Hupeh, Kiangsi and Chekiang. Green tea is extensively cultivated, and the province is rich in minerals. Pop. about 23,600,000. Capital Ngan-king-foo, on the left bank of the Yangtse-kiang; pop. 40,000.

Niagara (ni-ag'ȧ-rȧ), a river of North America, separating Ontario from the State of New York, and conveying the waters of Lake Erie into Lake Ontario. It is 33½ miles long, and varies in breadth from 1 to 4 miles, being about the former where it issues from Lake Erie, near the city of Buffalo. It is occasionally interspersed with low wooded islands, the largest of which, Grand Island, has an area of 17,000 acres. The total descent in the river's course between the two lakes is 331 feet. About 15 miles from Lake Erie a sudden narrowing and descent in the channel causes what are called the Rapids, below which the river, here divided by Goat Island, is precipitated over the celebrated Falls. The rush of the river is such that the water is shot a clear 40 yards from the cliff, leaving a narrow pathway for a short distance below for the adventurous. The cataract on the south side of the island, called the American Fall, is 162 feet high, width 1125 feet; that on the Canadian side, called the Great or Horseshoe Fall, is 149 feet high, width 2100 feet. Below the falls the river rushes with great velocity down the sloping bottom of a narrow chasm for a distance of 7 miles. About 3 miles below the falls a sudden turn in the channel causes the water to whirl in a vast circular basin before renewing its journey. Logs and other floating material sometimes continue whirling here for many days. Several bridges cross the river below the falls, one of them a suspension bridge 1190 feet long and 190 feet above the water. The land on both sides of the river has been converted into an international park.



SECTION OF THE HORSESHOE FALL, NIAGARA.

a, Medina Sandstone, 300 feet; *b*, Clinton Limestone and Shale, 30 feet; *c*, Niagara, 165 feet, of which 85 feet are seen at the Fall.

Niagara Falls a city of Niagara County, New York, on the Niagara River, 22 miles N. N. W. of Buffalo. The electrolytic works develop enormous horse-power from the cataract waters, which is partly used in a large number of manufacturing establishments. The place is a popular resort. Pop. 30,445.

Niagara Falls, formerly CLIFTON or SUSPENSION BRIDGE, a city of Welland County, Ontario, Canada, 40 miles S. S. E. of Toronto, on the west bank of the Niagara opposite the falls. Pop. (1911) 9248.

Niagara Falls, POWER PLANT, was constructed from the plans of the International Niagara Commission which met in London, England, 1889. They considered the utilization of electricity and compressed air for the conveyance of the power and selected the former; with a canal, one mile in length with wheel-pits 178′ deep, 140′ long and 20′ wide, each pit having a turbine wheel weighing forty tons. The turbines are attached to a dynamo each one of which develops five thousand horse-power. There are many of those in operation, other plants having been founded on the Canadian side of the river. Tunnels cut through solid rock carry off the waste water. Buffalo, twenty-two miles distant, and other cities are furnished with this electric current. A treaty signed between the United States and Great

Britain regulates the use of Niagara water power, giving Canada the privilege of using 32,100 cubic feet of water per second and the United States 16,300 Canada can supply power to the New York side. A greater use of water would be detrimental to the falls.

Niam Niam (nī′am nī′am), a negro race inhabiting a district of North Central Africa extending from 29° to 24° E. lon., and probably further to the west; and from about 4° to 6° N. lat. The Niam Niam are a hunting and agricultural people, and are of a compact and powerful build, with long nose, small mouth, broad lips and reddish-brown or copper-colored skin. Apparently at a comparatively recent period they have wandered from the west to their present habitation, and have become masters of the country. They have a well-founded reputation for cannibalism, though some tribes seem to have renounced the practice.

Niare, or BUSH COW (*Bos brachyceros*), a small wild ox, native to Western Africa.

Nias (nē-äs′), an island in the Malay Archipelago, lying west of Sumatra; length about 70, breadth about 20 miles. Its inhabitants, of the Malay race, are numerous, industrious and frugal, but at the same time avaricious, vindictive, and sanguinary. Rice, sugar and pepper are grown extensively. It belongs to the Dutch. Pop. 100,000.

Nibelungenlied (nē′bė-lụng-ėn-lēt; 'Lay of the Nibelungen'), a German epic written in the Middle High German dialect, and dating from about the twelfth century. It is divided into thirty-nine sections, contains some 6000 lines, and is constructed in four-lined rhymed stanzas. The tale, briefly told, is this: Kriemhild lives with her brother Gunther, king of Burgundy, at Worms. To his court comes Siegfried, son of Siegemund, king of the Netherlands. This Siegfried is possessed of the Nibelungen gold hoard, a magic sword, a cloak of darkness, besides great strength and courage. Thus equipped he comes to the court and wins the love of Kriemhild. In gratitude for his success Siegfried undertakes to assist Gunther, the brother of his bride, in his efforts to win the hand of Brunhild, an Icelandic princess. Together they sail for the far north, and there Gunther succeeds, with the help of Siegfried's cloak of darkness, in winning the three test games of skill which the lady played with him. Still on the bridal night the princess mocked at Gunther her husband, wrestled with him, bound him, and hung him up scornfully against the wall. But the next night Gunther, with the invisible help of his friend Siegfried, overcomes the bride, and the latter carries away her girdle and ring. Siegfried and his wife Kriemhild next appear on a visit to the Burgundian court at Worms, where Gunther the king now resides with his wife Brunhild. While there the two ladies quarrel, and in her rage Kriemhild taunts Brunhild with having had dealings with her husband Siegfried, and in proof thereof she produces the ring and girdle which he took from her chamber on the bridal night. Brunhild bitterly resents this calumny and meditates vengeance. This she accomplishes by the hand of Hagen, one of her husband's warriors, who slays Siegfried in his sleep. The widow's revenge completes the story.

Nicæa (ni-sē′a; Nice), an ancient city of Asia Minor, capital of Bithynia, about 45 miles S. E. of Byzantium. Under the Roman Empire it retained long an exalted rank among the eastern cities, and is renowned in ecclesiastical history for the famous council held here in the reign of Constantine (A.D. 325), in which the formula bearing the name of the Nicene Creed was drawn up. After the foundation of the Latin Empire in Constantinople in 1204 the Greek Emperor Theodorus Lascaris made Nicæa the capital of his empire, which it continued to be until in 1261 the Greek emperors recovered Constantinople. It was finally taken by the Turks in 1330.

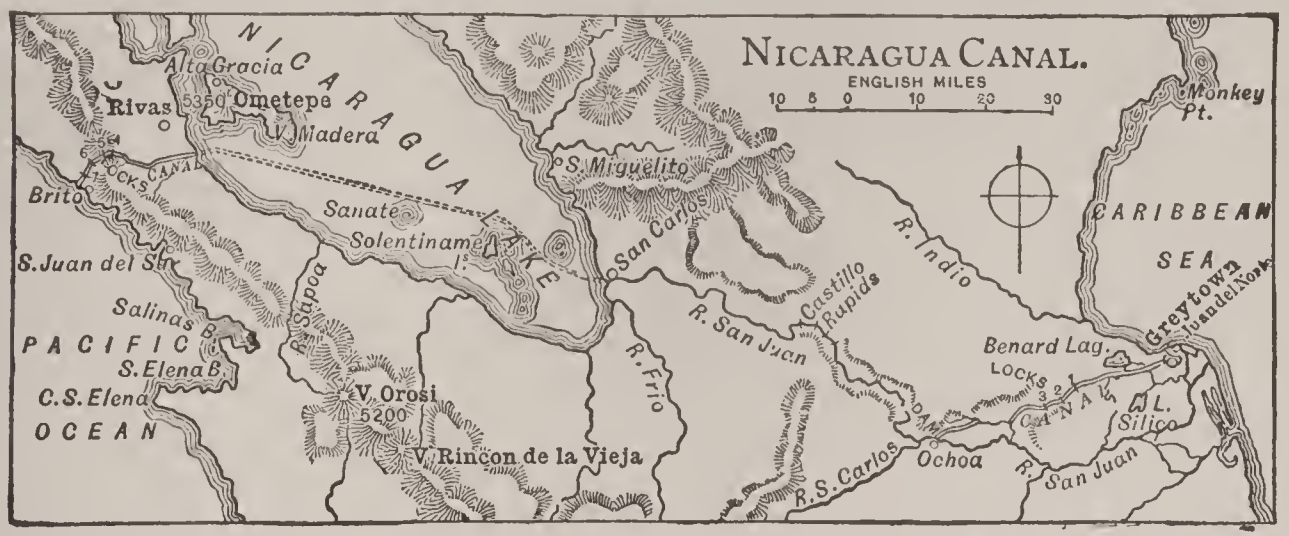
Nicander (nī-kan′der), a learned Greek physician and poet, a native of Claros, near Colophon, in Ionia, who flourished about 185-135 B.C. Two of his poems are extant.

Nicaragua (nē-kȧ-rä′gwȧ, or nik′a-), a republic of Central America, extending from the Pacific Ocean to the Caribbean Sea, and having on the north and northeast the State of Honduras, and on the south Costa Rica; area, about 51,660 square miles. The State is traversed by the Cordillera of Central America, between which and the Pacific coast there is a remarkable depression extending for 300 miles and containing Lake Nicaragua (which see) and the smaller Lake Managua at no great elevation above the sea. Along the coast is a chain of volcanic cones, rising in some cases to 7000 feet. From the Cordillera the surface slopes to the Carribean coast (Mosquito Territory), which is low and swampy. Nicaragua has a considerable number of rivers, the chief flowing to the Caribbean Sea, as the Coco and the San Juan. Veins of silver, copper and gold occur. The climate is on the whole healthy, the interior and mountainous

parts being more dry and cool than on the coasts. The vegetable productions include indigo, sugar, coffee, cacao, cotton, maize, rice, etc. Fruits of various kinds are plentiful. One of the principal sources of wealth consists in cattle, of which there are great numbers, the high plains affording excellent pasturage. The capital is Managua. In 1821 Nicaragua joined Guatemala, Costa Rica, Honduras and Salvador in revolting against Spain, and after a sanguinary civil war it achieved independence. It has been the scene of various revolutions and counter-revolutions. The republic is governed by a president elected every four years, a Senate and a House of Representatives elected by universal suffrage. The principal exports are caoutchouc, coffee, hides, dye-wood and indigo. Corinto, on the Pacific, and San Juan del Norte or Greytown, on the Caribbean Sea, are the chief ports. Pop. estimated at 550,000.

Nicaragua, LAKE, an extensive sheet of water in Central America, in the State of same name, 90 miles long northwest to southeast; greatest breadth, 40 miles; mean, 30 miles; 110 feet above the Pacific, from which it is separated by a strip of land 12 miles wide. The river San Juan de Nicaragua flows from its southeastern extremity into the Caribbean Sea, and at its northwestern extremity it is connected with the smaller Lake of Managua, or Leon, by the river Penaloya. Steamers now ply upon it, as it forms a link in the traffic route.

Nicaragua Canal, a canal that was projected for the purpose of providing a waterway for ships across Central America from the Pacific to the Atlantic, passing through Nicaragua, and utilizing Lake Nicaragua and the San Juan River. The total length of the route was to be 170 miles from Greytown, on the Caribbean Sea, to Brito, on the Pacific. Of this 64½ miles were to consist of free navigation in the San Juan River, and 56½ of free navigation in Lake Nicaragua; total 121 miles. A beginning had been made by the United States government, when this work, estimated to cost $180,000,000, was abandoned for the Panama route. See *Panama Canal.*



Nicaragua Wood, the wood of a tree growing in Nicaragua, supposed by some to be a species of *Cæsalpinia*, and by others of *Hæmatoxylon*. This wood and a variety called peach-wood are exported for the use of dyers.

Nicastro (nē-käs′trō), a town in South Italy, province of Catanzaro, situated W. of the Apennines, in the Bay of Sant' Eufemia. It is the see of a bishop and a place of considerable trade. Pop. 13,671.

Niccolini (nēk-ko-lē′nē), GIOVANNI BATTISTA, an Italian dramatist, born in 1785; died in 1861. He studied at the University of Pisa; published his first poem in 1804; became in 1807 librarian and professor of history in the Academy of Fine Arts in Florence, and in 1810 produced *Pollissena*, his first tragedy. Other tragedies followed, partly on classical, partly on modern subjects, which procured for their author a wide fame.

Nice (nēs; Italian, *Nizza;* ancient, *Nicæa*), a city and seaport of France, on the Mediterranean, capital of the department of Alpes Maritimes, beautifully situated near the base of the Maritime Alps, and on both sides of the Paglion, a mountain torrent of short and rapid course. The original town was clustered round a hill near the shore, crowned by a strong castle. The new city lies to the west and north of this, on the right bank of the Paglion, and continues to spread rapidly. There are

two squares, many fine boulevards; along the whole front of the city towards the sea is a broad public promenade, and the pier has a bathing establishment attached. Nice is much resorted to as a health resort during winter. The climate is mild, the mean temperature being 60° F.; but the changes of wind are sudden, especially in spring. Nice possesses silk, cotton and paper mills, oil mills, etc. The harbor or port is small and open to the southeast. The exports consist principally of oil, wine and silk, with essences, perfumes, etc. Nice belonged to Italy previous to 1860. Pop. 127,027.

Nice, Councils of, ecclesiastical councils held at Nice or Nicæa, in Asia Minor, in 325 and 787. The object of the first Council of Nice, which was convened by Constantine, was to settle the controversies which had arisen in regard to the doctrine of the Trinity. The session lasted about two months. A creed was adopted by the council in its later form known as the Nicene Creed (which see). The council of 787 was summoned by the Empress Irene, with the concurrence of the pope, and it decreed that images were to be used as aids to devotion.

Nicene Creed (nī'zēn krēd), a summary of Christian faith adopted by the Council of Nice against Arianism A.D. 325, altered and confirmed by the Council of Constantinople A.D. 381. Its characteristics are the insertion of the term 'of one substance with the Father,' directed against the Arian heresy; the insertion of the words 'and the Son'; and the omission of the clause 'He descended into Hell.' It is recited both in the Roman Catholic and in the Anglican Church liturgies.

Niche (nich), a recess in a wall for the reception of a statue, a vase, or of some other ornament.

Nichol (nik'ol), John, son of Professor John P. Nichol, born at Montrose, Scotland, in 1833; educated at Glasgow and Oxford Universities. From 1861 to 1889 he was professor of English Literature in Glasgow University. Besides his contributions to the *Encyclopædia Britannica* and the *Westminster* and *North British Reviews*, etc., he published the following:—*Tables of European Literature and History* (1876); *Tables of Ancient Literature and History* (1877); *English Composition* (1879); *Byron* (1880); *The Death of Themistocles and other Poems* (1881); *American Literature* (1882); *Kant* (1889); etc. He died in 1894.

Nichol, John Pringle, astronomer, born in 1804, at Brechin, Forfarshire; died in 1859. Licensed for the Scottish Church, he turned his attention to astronomy, and acquired so much reputation that in 1836 he was appointed professor of astronomy in Glasgow University. Among Dr. Nichol's literary works may be mentioned: *The Architecture of the Heavens* (1838); *Contemplations of the Solar System* (1838); *The Stellar Universe* (1848); and the *Planetary System* (1851). He likewise edited a *Cyclopædia of Physical Sciences*, published in 1857.

Nicholas I (nīk'o-lâs), Nikolai Pavlovich, Emperor of Russia, third son of the Emperor Paul I, was born in 1796; died in 1855. He ascended the throne in 1825. He made war with Persia in 1827-28; joined in the Treaty of London, which secured the independence of Greece; and was one of the allied monarchs who destroyed the Turkish fleet at Navarino in 1827. This affair led to war between Russia and Turkey, in which the latter was defeated, paid indemnity, and signed the treaty of peace at Adrianople in 1829. He suppressed the Polish insurrection which broke out in the following year with relentless severity. In 1848 Nicholas assisted Austria with an army corps in putting down the rising in Hungary. Early in 1852 began the Russian effort to take over the holy places and assume the protectorate of the Christians in Palestine. This led to the Crimean war, before the close of which Nicholas died from lung disease.

Nicholas II, Emperor of Russia, was born in 1868, and in 1894 succeeded his father, Alexander III. While heir-apparent he was made commander-in-chief of the Cossack troops, governor of the Cossacks of the Don and Kooban, colonel in the guards and member of the Council of the Empire. Among the leading events of his reign were the alliance of Russia with France, The Hague conference held at his instigation, the building of the Siberian Railway, the extension of Russian dominion in Manchuria, and the disastrous war with Japan, followed by a revolutionary outbreak in Russia and the granting of representative government to the Russian people.

Nicholas, St., one of the most popular saints in the Greek Church.

Nicholls, Mrs. See *Brontë, Charlotte.*

Nicholson (nīk'ol-sun), John, brigadier-general, born in Dublin, in 1822. He had a distinguished career in India, and was killed at the siege of Delhi (1857).

Nicias (nish'e-as), an Athenian statesman and general, who displayed much skill and activity in the time of the Peloponnesian war. He was put to death after the ill-success of his expedition to Sicily (B.C. 413).

Nickel (nik'el), a metal of a white color, of great hardness, very difficult to be purified, always magnetic, though much less so than iron, and when perfectly pure malleable and ductile; chemical symbol Ni, atomic weight 59 nearly. It unites in alloys with gold, copper, tin and arsenic, which metals it renders brittle. With silver and iron its alloys are ductile. Nickel is found in all meteoric stones, but its principal ore is a copper-colored mineral found in Germany. Nickel has become an object of considerable importance, and is extracted from several pyrites, compounds of nickel, cobalt, antimony, arsenic, sulphur, or iron. The salts of nickel are mostly of a grass-green color, and the ammoniacal solution of its oxide is deep blue. Nickel mixed with brass in varying proportions is now well known and largely used as German silver or nickel silver. Another important use of the metal is for coating articles by the electro-plate process. In the United States coins of small value are made of nickel. Harveyized steel, used for armor plate, is a combination of steel and nickel.

Nickel-glance, a grayish-white, massive, and granular ore of nickel, consisting of 35.5 nickel, 45.2 arsenic and 19.3 sulphur.

Nickel-plating, is the process by which a coating of nickel is placed upon another metal, and the essentials of the process, as in electro-plating, are a proper solution of the metal and an electric battery. See *Electro-metallurgy.*

Nickel Steel, an alloy of steel and nickel, steel being much hardened by combination with 8 to 16 per cent. of nickel. After 1893 all armor for United States warships was made of this alloy. It is also used for many other purposes where hardness is requisite to its utility.

Nicobar Islands (nik-ō-bär'), a group situated in the Indian Ocean northwest of Sumatra; area, about 426 square miles. They are well wooded and yield cocoanuts and tropical fruits in abundance. The natives, who seem to be of the Malay race, are reported to be lazy, cowardly and treacherous. Cocoanuts are extensively exported, also edible nests, trepang, etc. The islands were occupied by Britain in 1869, and are governed along with the Andamans, the chief station being Nancowry, with a fine harbor. Pop. 6700.

Nicol (nik'ul), ERSKINE, painter, born in Leith, Scotland, in 1825; received his education in art at the Trustees' Academy, Edinburgh, resided some time in Ireland, where he received his peculiar bent as a delineator of Irish life and manners; settled in London (1862), and contributed regularly to the Royal Academy, of which he was elected an associate in 1866. Among his well-known pictures of Irish subjects are *Notice to Quit, Renewal of the Lease Refused, Bothered, Among the Old Masters* and *Interviewing the Member.*

Nicolaiev (nyē-kå-lä'yef, or NICOLAEF), one of the principal naval stations of Russia, on the Black Sea, in the government of Kherson and 36 miles northwest of the town of Kherson, at the confluence of the Ingul and Bug. It occupies a large space, is fortified and well built, with wide streets and a finely planted boulevard. It was founded in 1791, and since its connection with the Russian railway system its trade and importance have vastly increased. Pop. 92,060.

Nicolaitans (nik-u-lā'i-tanz), a sect in the early Christian Church, so named from *Nicolas,* a deacon of the church of Jerusalem. They are characterized as inclining to licentious and pagan practices, Rev. ii, 6.

Nicolas (nik'o-las), ST., a town in Belgium, in East Flanders, 19 miles E. N. E. of Ghent, in one of the best cultivated and most populous districts in Europe. Its manufactures are cotton, woolen, linen, and silk goods, lace, etc. Pop. 31,080.

Nicolas, SIR NICHOLAS HARRIS, an English writer, son of a naval officer, born in 1799; died in 1848. He entered the navy; attained the rank of lieutenant; afterwards studied law, and was called to the bar in 1825. He wrote a number of valuable biographies for the Aldine edition of the poets, and among his many works are *Synopsis of the Peerage of England: The Chronology of History; History of the Orders of Knighthood of the British Empire; Despatches and Letters of Lord Nelson; Memoirs of Sir Christopher Hatton.*

Nicolay (nik'o-lā), JOHN GEORGE, author, born at Essingen, Bavaria, in 1832; died in 1901. He came to the United States, became a printer in Illinois and subsequently private secretary to President Lincoln. He was consul at Paris, 1865-69, and marshal of the Supreme Court, 1872-87. He wrote *The Outbreak of the Rebellion* and with John

Hay wrote *Abraham Lincoln: A History*, and edited Lincoln's complete works.

Nicole (nē-kol), PIERRE, a French writer, one of the so-called Port-royalists, born at Chartres in 1625; died in Paris in 1695. From the provinces he proceeded to Paris, where he studied theology; afterwards he entered Port Royal, where he was engaged in teaching and associated himself with Arnauld in the preparation of his work on logic. Besides this he translated *Paseal's Letters* into Latin, and wrote *Essais de Morale* and *Les Imaginaires et les Visionnaires*, the latter provoking a severe attack from Racine.

Nicomedia (nik-u-mē-di'a), an ancient city of Asia Minor. See *Ismid*.

Nicopoli (ni-kop'o-lē), a city of Bulgaria, on the Danube, with a strong citadel and other works. Pop. 5815.

Nicopolis (ni-kop'o-lis; 'City of Victory'), the name of many ancient cities. One of the most celebrated was in Epirus on the northern side of the Ambracian Gulf (Gulf of Arta), built by Augustus in commemoration of his naval victory over Antony at Actium.

Nicosia (nē-ko-zē'a), a town in the province of Catania, Sicily, 39 miles W. N. W. of the town of Catania, the see of a bishop. Pop. 16,004.

Nicosia, or LEFKOSIA, the capital of the Island of Cyprus, situated in the center of the island. Its lofty walls and bastions still present an imposing appearance, and it has a number of mosques and Greek churches, the residence of the High Commissioner, etc. It has manufactures of silk, cotton, leather. Pop. 16,004.

Nicot (nē-kō), JEAN, born in 1530; died in 1600; was French ambassador at the court of Portugal, where he was presented with some seeds of the tobacco plant, which he introduced into France about 1560. The botanical term for tobacco (*Nicotiana*) is derived from his name.

Nicotiana (nik-u-ti-a'na), the tobacco genus of plants. See *Tobaeco*.

Nicotine (nik'u-tin), a volatile alkaloid base obtained from tobacco. It forms a colorless, clear, oily liquid, which has a strong odor of tobacco. It is highly poisonous, and combines with acids, forming acrid and pungent salts.

Nictitating Membrane (nik-ti-tā'-ting), or 'THIRD EYELID,' a thin membrane by which the process of winking is performed in certain animals, and which covers and protects the eyes from dust or from too much light. It is chiefly found in birds and fishes, and is represented in a rudimentary condition in man, and higher mammals generally, by the 'semi-lunar folds' situated at the inner or nasal angle of the eye.

Niebelungenlied. See *Nibelungenlied*.

Niebuhr (nē'bör), BARTHOLD GEORG, historian, born at Copenhagen in 1776 (see next article); died at Bonn in 1831. He studied law at Göttingen, and philosophy at the University of Kiel; became, in 1796, private secretary to the Danish minister of finance, and soon after under-librarian in the royal library of Copenhagen; while in 1798 he visited England and attended the University of Edinburgh for one session. Niebuhr subsequently transferred his services to Prussia, and held various government offices. Having been appointed historiographer-royal he delivered lectures on Roman history in the University of Berlin, and in 1811 published them in two volumes. In 1816 he was appointed Prussian minister to the papal court at Rome and there he resided until 1822, chiefly occupied in historical research. At the latter date he returned to Bonn and became adjunct professor of ancient history at the university. Here he continued his *Roman History*, the third volume of which appeared after his death. He also superintended the *Corpus Seriptorum Byzantinorum*, and published various archæological and philological treatises. His *Roman History* covered only the period down to the first Punic war, but introduced quite a new era in the study of Roman antiquity.

Niebuhr, KARSTENS, a German traveler, father of the above, born in Hanover in 1733; died in 1815. In 1760 he entered the Danish service as lieutenant of engineers, and in the following year joined the expedition sent by Frederick V, of Denmark, to explore Arabia. As the result of the expedition he published *Besehreibung von Arabien* (Copenhagen, 1772), and *Reisebesehreibung von Arabien und anderen umliegenden Ländern* (two vols. Copenhagen, 1774-78).

Niel (ni-el), ADOLPHE, a French marshal, born in 1802; died in 1869. He was educated at the École Polytechnique, Paris, and the Military School, Metz; took part in the expedition against Constantine in Algeria; assisted as head of the staff of engineers at the siege of Rome in 1849 during the revolutionary movement under Garibaldi; commanded the engineers and planned the operations

against Sebastopol in 1854-55, distinguished himself in the Italian campaign of 1859, and was thereafter made a marshal of France by Napoleon III.

Niello (ni-el'ō), a method of ornamenting metal plates, much practiced in the middle ages, and which gave rise to copperplate engraving. The lines of a design were cut in the metal, and filled up with a black or colored composition, which gave effect to the intaglio drawing.

Nielson (nēl'sun), JULIA, actress, born at London in 1868; appeared on the stage in 1888. She toured Great Britain and the United States, her greatest success being as *Rosalind*, in *As You Like It*. She married Fred Terry, an actor.

Niemen (nyā'men), or MEMEL, a large river which rises in Russia, flows at first west through the government of Vilna and past the town of Grodno; then north, forming the boundary between Poland and the government of Vilna; then again west, separating Kovno and Poland; and finally enters East Prussia, passes Tilsit, and falls into the Kurisches Haff. It is 640 miles in length, and is navigable as far as Grodno, 400 miles.

Nietzche (net'she), FRIEDRICH WILHELM, philosopher, born in Saxony, in 1844; died in 1900. He won distinction by works on the origin of tragedy, etc. In 1878 he began a long series of works in which he developed a revolutionary philosophy, denouncing religion and advocating the principle of a pitiless struggle for existence. He became insane and was confined in a hospital in 1895.

Nièvre (nyāvr), a department of Central France, bounded by Yonne, Cher, Allier, Saône-et-Loire, and Côte-d'Or; area, 2631 square miles. It receives its name from the Nièvre, a small tributary of the Loire. It is generally hilly, is only of indifferent fertility, produces some good wine, and has nearly a third of its surface covered with wood. Its minerals include iron and coal, and the chief manufactures are woolen cloths, linen, cutlery, etc. Pop. 313,972.

Niflheim (nif'l-hīm), in Scandinavian mythology, the region of endless cold and everlasting night, ruled over by Hela.

Nigella (nig-el'la), fennel flowers, a genus of annual plants, nat. order Ranunculaceæ.

Niger (nī'jėr), the name of a great river of Western Africa, which rises on the north side of the Kong Mountains, flows north and northeast, afterwards turns southeast and south until, by various channels, it enters the Gulf of Guinea, its total length being about 2600 miles. Throughout its course the river is known under various names, such as Joliba, Kworra (Quorra), Mayo, etc. Not much is known of the river until it reaches Sego, about 340 miles from its source; but here it enters upon a fertile tract of country which continues until Timbuctoo is reached. Large islands divide the river channel, and its tendency here is to spread over the flat country in a network of small streams. At the town of Burrum, where it trends in a curve to the southeast, the river is known as the Mayo until it reaches its confluence with the Benué, where it becomes known as the Kworra. At Aboh, about 100 miles from the sea, the great delta of the Niger begins. This delta extends along the coast for about 150 miles, and is intersected by a network of channels and islands, the principal navigable courses being the Nun, Bonny and Mari. Mungo Park was the first European who explored this river (1796-97).

Nigeria (nī-jer'i-a), a great region of Western Africa within the British sphere of influence, comprising the Niger delta, and a tract on both sides of the river more than 1000 miles from its mouth, as well as the valley of the Benué for a long distance. A great part of this tract was formerly administered by the Royal Niger Company, a British company chartered in 1886. In 1898 the French encroached on this territory and caused great danger of war between that country and Great Britain. Since 1900 it has been under government control. Its area is roughly estimated at 400,000 sq. miles and its pop. at 15,000,000. It comprises a large number of native states and extends from the Gulf of Guinea to 14° N. lat. and lies between 3° and 13° E. long. Much of it is heavily forested and yields important forest products.

Night-blindness, the medical term being *hemeralopia*, is a disease in which the eyes enjoy the faculty of seeing while the sun is above the horizon, but are incapable of seeing by the aid of artificial light.

Night-hawk, a species of the goat-sucker family (*Chordeiles Virginiānus*), a bird universally known in the United States, 9½ inches in length and 23 in extent of wing. It is a bird of strong and vigorous flight, and its prey consists of beetles and other large insects. Other American species are the 'chuck-will's widow' (*C. carolinensis*) and the 'whip-poor-will' (*C. vocif-*

ĕrus), both of which, like the night-hawk, arrive in May, and leave the States in September.

Night-heron, a wading bird of several species belonging to the family Ardeidæ (herons and cranes). The species occur in Europe, Asia, Africa and America. The common night-heron is the *Nyctieŏrax Gardeni* or *europæus*. It is about 20 inches in length, and has three long narrow feathers proceeding from the nape of the neck, and hanging backwards.

Nightingale (nī′tin-gāl), a well-known passerine bird (*Luscinia philomēla*) of the thrush family. The nightingale sings at night, and its famed chant is the love song of the male, which ceases when the female has hatched her brood. It is a native of many parts of Europe and Asia, and of the north of Africa. It is migratory, extending its summer migrations as far north as the south of Sweden. In England, where it appears about the middle of April, it is rather a local bird, some parts appearing to be quite unsuited to its habits; the northern counties are seldom visited, and in Scotland and Ireland it is unknown. It feeds on caterpillars and other larvæ, frequents hedges and thickets, and builds its nest on the ground or near it, laying four or five eggs of a blue color. The young are hatched in June, and are prepared to accompany their parents in their southward migration in August. It is solitary in its habits, and its coloring is very inconspicuous. Another species inhabits Southeastern Europe.

Nightingale (*Luscinia philomēla*).

Nightingale, Florence, daughter of William Shore Nightingale, Embly Park, Hampshire, was born at Florence in 1820. At an early age she manifested a keen interest in suffering humanity, and from philanthropic motives visited the chief military hospitals in Europe, and studied the chief nursing systems. During the Crimean war (1854) the hospital accommodation was found to be very defective, and Miss Nightingale promptly volunteered to organize a select band of nurses at Scutari. The offer was accepted by the War Office, and within a week Miss Nightingale was on her way to the East, where she rendered invaluable service to the sick and wounded by her incessant labors in nursing and hospital reform. The strain, both mental and physical, which this work demanded permanently injured her health; yet notwithstanding her confinement to a sick room, she continued to give her experience in the interest of hospital reform, and for this purpose she was consulted during the American Civil war and the Franco-German war. She published *Notes on Hospitals* (1859), *Notes on Nursing* (1806), *On the Sanitary State of the Army in India* (1863), *Notes on Lying-in Institutions* (1871), and *Life or Death in India* (1873). She died in 1910.

Night-jar, one of the British names of the common goat-sucker.

Nightmare (nīt′mār), a state of oppression or feeling of suffocation which sometimes comes on during sleep, and is accompanied by a feeling of intense anxiety, fear, or horror, the sufferer feeling an enormous weight on his breast, and imagining that he is pursued by a phantom, monster, or wild beast, or threatened by some other danger from which he can make no exertion to escape. The sufferer wakens after a short time in a state of great terror, the body often covered with sweat. The proximate cause of nightmare is said to be irregularity of the circulation in the chest or brain, and the disorder is generally due to repletion and indigestion, but sometimes to the fact of the sufferer lying in an awkward position in bed.

Nightshade (nīt′shād), the English name of various species of plants, chiefly of the genus *Solānum* (to which the potato belongs). The woody nightshade or bittersweet (*S. Dulcamāra*) and common or garden nightshade (*S. nigrum*) are European plants, the first growing in hedges and among bushes, and the latter in gardens, fields, and waste places. The root and leaves of *S. Dulcamāra* are narcotic, and have been applied to various medicinal uses. The berries, if not absolutely poisonous, are suspicious. This plant has been introduced from Britain into the United States, and grows wild in many localities. *S. nigrum* is fetid and narcotic, and has also been employed medicinally. *Deadly nightshade* is *Atrŏpa Belladonna*.

(See *Belladonna.*) For *enchanter's nightshade* see that article.

Nigrin (nig'rin), an ore of titanium, found in black grains or rolled pieces, containing about 14 per cent. of iron. It occurs in Ceylon and Transylvania.

Nigritia. See *Soudan.*

Nihilist (nī'hil-ist), the name at first applied specifically to the revolutionary party in Russia which accepted the destructively negative philosophy of Bakunin and Herzen, but now applied indiscriminately to Russian revolutionists. This name was given to the party by Tourgenieff in his stories of Russian society, and accepted by them as descriptive of their character. Their object was to destroy all forms of government, overturn all institutions, annihilate all class distinctions, sweep away all traditions. They left to future generations the task of constructing society out of the ruins left by their relentless destructive policy. For some years this propaganda was spread in printed and oral forms among the newly enfranchised serfs by thousands of young people of both sexes. About 1874, however, the Russian government began to interfere, the newspapers which advocated the Nihilist doctrine were suppressed, foreign pamphlets seized, and large groups of the revolutionists summarily tried and condemned to death and exile. Hitherto the Nihilists had spread their principles by peaceful means, but after the trial in 1877, in which 99 persons were sent to Siberia, a secret and sanguinary struggle between armed assassins and the government began. The first startling indication of the new departure was the murder of General Trepoff by a young woman named Vera Sassulitch, and this was followed by the assassination of Generals Mezentzoff and Drenteln, Prince Krapotkin, and Commander Heyking. The incendiary followed the assassin. In June, 1879, no fewer than 3500 fires broke out in St. Petersburg and other large towns, most of which were attributed to the Nihilists. Various attempts were made to assassinate the emperor. Four shots were fired at him by Solovieff, a train in which he was supposed to travel was wrecked by Hartmann, an apartment in the Winter Palace at St. Petersburg was blown up, and at last, in March, 1881, Alexander II was murdered by a bomb thrown beneath his carriage in the street near the palace. This terrible act seemed to exhaust the fury of the Nihilists, for since then they have been very little in evidence.

Niigata (nē-i-gä'tȧ), the chief town of the province of Echigo, Japan, situated on the west coast of the island of Hondo and on the left bank of the Shinano. This port was opened to foreign trade by the treaty of 1860; but the obstructed state of the river, the open anchorage, and the severe winter has hitherto prevented the development of much trade. The town is well built, the streets are traversed by canals, there is an hospital and a college, and considerable coasting trade. Pop. (1903) 58,821.

Nijkerk (nī'kerk), a town of Holland, province Gelderland, near the Zuider Zee, with which it communicates by canal. Pop. 8124.

Nijmegen (nī'mā-ghen), NYMEGEN, or NIMEGUEN (nim'e-gen), a city in the Dutch province of Gelderland, delightfully situated on the slopes of several hills, reaching down to the Waal. It has a fine old church (St. Stephen's), and a Renaissance town hall of the sixteenth century. The industrial occupations include tanning, brewing, metal goods, cotton manufactures, etc. The town is celebrated for the treaty of peace concluded in 1678 between France and Holland and Spain, and for that of 1679 between the German Empire, France and Sweden. It was formerly a strong fortress, but the fortifications have been recently abolished. Pop. (1904) 49,342.

Nijni-Novgorod (n i z h' n ē nov'gorod), a town in Russia, capital of government of same name, at the confluence of the Oka and Volga, 255 miles east of Moscow. The town forms three parts: the upper district, including the citadel; the lower portion, called the Nijni Bazaar; and the suburb, occupied by the great annual fair, and containing 6500 booths, besides other structures for its accommodation. This fair, begun in 1816, is held annually between July 15 and September 1, O.S. Here there are gathered together an immense multitude of people (say 250,000) from all parts of Russia and many parts of Asia, and the annual value of the merchandise sold is estimated at about $150,000,000. The chief products sold are cotton, woolen, and linen goods, tea, silk and silk goods, metal wares, furs, leather, porcelain, earthenware and glass, coffee, wine. Pop. 95,000.—The province has an area of 19,704 square miles. The surface forms an extensive plain, occasionally broken and diversified by low undulating hills. It is drained by the Volga. The soil is poor, and the crops, chiefly hemp and flax, not very abundant. A large

IRRIGATION ON THE NILE

part is covered with forests. Pop. 1,600,304.

Nijni-Tagilsk (n i zh-nē-tà-gilsk′), a town of Russia amid the Ural Mountains, in the government of Perm, and 150 miles east of the town of Perm, in the midst of a district very rich in minerals. Pop. about 30,000.

Nikē (nī′kē), in Greek mythology, the goddess of victory. She was rewarded by Zeus with the permission to live in Olympus, for the readiness with which she came to his assistance in the war with the Titans. There is a temple to her on the Acropolis of Athens still in excellent preservation.

Nikolaef. See *Nicolaiev.*

Nikolayevsk (n y ē - k à -lā′yefsk), a town of Russia, gov. of Samara, on the Igris, a tributary of the Volga. Pop. 8200.

Nikolsburg (ni′kolz-börg), or NIKLASBURG, a town of Austria, in Moravia, 27 miles south of Brünn. There are linen and woolen manufactures and some trade. Pop. 8091.

Nikopol (nē-ko′pōl), a town of Southern Russia, government of Ekaterinoslav, on the Dnieper. Pop. 21,282.

Nile (nīl), a great historic river in Africa, the main stream of which, known as the *Bahr-el-Abiad*, or White Nile, has its chief source in the equatorial lake Victoria Nyanza. What is known as the *Bahr-el-Azrek*, or Blue Nile, a much smaller stream, joins the White Nile at Khartoom, lat. 15° 40′ N. The source of the Blue Nile was discovered in the Abyssinian Highlands by Bruce in 1770, while the source of the other, or true Nile, was for long the subject of speculation and exploration. The discoveries, however, of Speke and Grant in 1861-62, of Sir Samuel Baker in 1863-64, and of subsequent explorers, have established the fact that the head waters of the Nile are collected by a great lake situated on the equator, called Ukerewe, or Victoria Nyanza. The Nile, near where it flows out of Lake Victoria, forms the Ripon Falls, then flows generally northwest; about lat. 1° 40′ N. it expands into Lake .brahim Pasha, afterwards forms the Falls of Karuma and the Murchison Falls, and then enters another lake, the Albert Nyanza, at an elevation of about 2550 feet. This lake, as was discovered by Henry M. Stanley, receives the waters of another lake further to the southwest, Lake Muta Nzige, or Albert Edward, the channel of communication being the river Semliki. From the Albert Nyanza to the Mediterranean the general course of the Nile is in a northerly direction, with numerous windings. Above Gondokoro, about lat. 5° N., the river forms a series of cataracts; but between these falls and the Albert Nyanza, a distance of 164 miles, the river is broad, deep and navigable. Not far below Gondokoro the Nile begins to flow more to the west till it reaches lat. 9° N., where it receives the Bahr-el-Ghazal, one of its chief tributaries. On receiving this affluent it turns due east for about 100 miles, and then after receiving the Sobat from the southeast flows almost due north to Khartoom. It receives its last tributary, the Atbara, from the Abyssinian frontier, for the rest of its course (some 1500 miles) being fed by no contributory stream. Between this point and the frontiers of Egypt occur several rapids or cataracts presenting greater or less obstacles to navigation, there being also another cataract some distance below Khartoom. In Egypt, at the head of the Delta near Cairo, it divides into two main branches, leading down respectively to Rosetta and Damietta, where they enter the Mediterranean. As rain scarcely falls in the greater part of the valley of the Nile the river owes its supplies to the copious rains and the vast lake areas of the tropical regions in which it takes its rise, and its volume thus depends upon the season. It begins to increase in June, attains its greatest height about September, and then subsides as gradually as it rose. (See *Egypt.*) The ordinary rise at Cairo is about 40 feet. During the flood a great portion of the Delta, and of the valley of Egypt higher up, is inundated. This annual inundation, with all the bounty which it brings, is watched and waited eagerly, and no doubt it was from this character of benefactor that the Nile has been worshiped as a god alike by Egyptians, Greeks and Romans. Its length is estimated at nearly 4200 miles, or rather less than that of the Mississippi-Missouri. Its usefulness in irrigation has been greatly increased under British influence by large dams, the barrage at Assuit, and the colossal dam at Assuan, which is estimated to have a holding power of 37,500,000,000 cubic feet, capable of irrigating hundreds of thousands of acres.

Nile, BATTLE OF THE. See *Aboukir.*

Niles, a city of Trumbull Co., Ohio, on the Mahoning River, 5 miles from Warren. Coal and iron are mined in its vicinity, and it has rolling mills, blast furnaces and other manufactures. Pop. 8361.

Niles, a city of Berrien Co., Michigan, on the St. Joseph's River, 112 miles s. w. of Lansing. It has varied industries, and ships large quantities of fruit and live stock. Pop. 5156.

Nilgiri Hills. See *Neilgherry Hills.*

Nilometer (nī-lom'e-tėr), an instrument for measuring the rise of water in the Nile during its periodical floods. The nilometer in the island of Rhoda (Er-Ródah), opposite to Cairo, consists of a slender graduated pillar standing in a well which communicates with the river. The pillar is divided into 24 cubits, each of which measures 21.4 inches. When the inundation reaches the height of 21 cubits it is considered adequate.

Nilsson (nil'son), CHRISTINE, born at Hassaby, near Wexib, in Sweden in 1843. Accompanied by her brother she used to sing at village fairs and places of public resort, where she also played on the violin. In 1857 her talent attracted the attention of a wealthy gentleman, who had her educated as a singer at Stockholm, and afterwards at Paris. In 1864 she made her first appearance as *Violetta* in *La Traviata* at the Théâtre Lyrique, Paris, and she appeared in 1867 for the first time at Her Majesty's Theater, London. On several occasions she visited America with the utmost success. Among her most famous impersonations are *Ophelia* in Thomas' *Hamlet,* and *Marguerite* in Gounod's *Faust.* In 1872 she married M. Auguste Rouzaud, who died in 1882; in 1886 she married Count A. de Miranda.

Nimbus. See *Cloud.*

Nimbus (nim'bus), a term applied in art, especially in sacred art, to a kind of halo or disc surrounding the head in representations of divine or sacred personages; as also to a disc or circle sometimes depicted round the heads of emperors and other great men. The nimbus in representations of God the Father is of a triangular form, with rays diverging from it all round, or in the form shown in the cut; the nimbus in representations of Christ contains a cross more or less enriched; that of the Virgin Mary consists of a circlet of small stars, and that of angels and saints is a circle of small rays. When the nimbus is depicted of a square form it indicates that the person was alive at the time of delineation. Nimbus is very frequently confounded with *aureola* and *glory.*

Nimeguen. See *Nijmegen.*

Nîmes, or NISMES (nēm), a city of Southern France, capital of the department of Gard, 62 miles northwest of Marseilles. It is an episcopal see, and consists of an old central quarter surrounded by handsome boulevards, beyond which are the modern quarters. Its manufactures are chiefly of silk and cotton goods; it has a considerable commerce, and is the great entrepot of Southern France for raw silk. Among

The Nimbus as variously represented in Sacred and Legendary Art.—1, God the Father. 2 and 3, Christ. 4, Charlemagne. 5, Emperor Henry II.

the buildings are the cathedral, the church of St. Perpetua, the Palais de Justice, etc.; but Nîmes is chiefly remarkable for its Roman remains, including an ancient temple, with thirty beautiful Corinthian columns, now serving as a museum and known as the *Maison Carrée;* the amphitheater, a circus capable of seating 20,000 persons; the temple of Diana; the ancient Tour Magne, on a hill outside of the city, supposed to have been a mausoleum; and a Roman gateway. Nîmes (anc. *Neumausus*) is supposed to have been built by a Greek colony, and was afterwards for about 500 years in the possession of the Romans. In the sixteenth century it became a stronghold of Calvinism, and suffered much during the civil wars, as also by the revocation of the Edict of Nantes, and during the revolution; but latterly it is a busy manufacturing center. Pop. (1906) 70,708.

Nimrod (nim'rod), described in Gen. x, 8 to 12, as a descendant of Ham, a son of Cush, a mighty hunter before the Lord, and the beginning of

whose kingdom was Babel, Erech, Accad and Calneh in the land of Shinar.

Nimrûd (nim′rud), the name given to the site of an ancient Assyrian city situated in the angle formed by the rivers Tigris and Zab, and about 18 miles below Mosul. It is one of the group of great cities which clustered round Nineveh, the capital, and it has been supposed, from inscriptions found in the ruins, that it is identical with the Calah mentioned in Genesis x. See *Nineveh.*

Nine-pins, a game with nine pins or pieces of wood set on end, at which a ball is rolled for throwing them down. It has been replaced in the United States by a game called *Ten-pins.*

Nineveh (nin′ē-ve), an ancient ruined city, formerly capital of the Assyrian Empire, in Asiatic Turkey, and in the pashalic of Mosul, on the left bank of the Tigris, along which, and opposite to the town of Mosul, it occupied an extended site. The first recorded notice of Nineveh is in Genesis x. Again it is spoken of in the book of Jonah as a 'great city.' It remained the capital of Assyria till about 606 B.C., when it was taken and burned by the Babylonian Nabopolassar and the Median Cyaxares. It was maintained as a local tradition that this ancient capital of Assyria lay buried on the left bank of the Tigris opposite Mosul; but the fact was not definitely settled until in 1841 M. Botta began excavations in the vast mounds which there existed. He was followed in this by Mr. (afterwards Sir Henry) Layard, who explored a great portion of the large angle formed by the Tigris and the Zab. In the mounds of Koyunjik, opposite Mosul, he excavated the palaces of Sennacherib, Assurbanipal and Esarhaddon. The walls of the city, which the inscriptions describe as Ninua, stretch along the Tigris for 2½ miles, and the elaborate outworks, moats, and defenses can still be traced. The important discoveries made by Layard were continued by Loftus, Hormuzd Rassam and G. Smith, and the result of their labors deposited in the British Museum. See *Assyria.*

Ningpo (ning′pō′), a large city of China, in the province of Chekiang, one of the ports open to foreign commerce, on a plain on the left bank of the Takia or Ning-po River, about 16 miles from its mouth. It is surrounded by a wall 25 feet high, 15 feet wide, and 5 miles in circuit, and its most remarkable edifice is the great Ning-po pagoda, 160 feet in height, and now partly in ruins. The manufactures consist chiefly of silk and cotton goods, carpets, furniture, etc. The principal exports are tea, silk, and raw cotton; and the principal imports sugar and opium. Pop. est. from 400,000 to 500,000.

Ninian (nin′yan), ST., a missionary preacher who spread Christianity among the Picts in the beginning of the fourth century. He was ordained bishop of the Southern Picts by Pope Siricius in 394. Ninian selected Candida Casa, or Whithorn (Wigtownshire), as his chief seat, but prosecuted his labors in all parts of Southern Scotland, and even as far north as the Grampians. He died in 432. His festival is September 16.

Ninon de L'Enclos. See *L'Enclos.*

Ninus (nī′nus), the fabulous founder of the Assyrian Empire, and of its capital, Nineveh. He is said to have married the similarly fabulous Semiramis, by whom he was afterwards murdered.

Niobē (nī′o-bē), in Greek mythology, the daughter of Tantalus, married to Amphion, king of Thebes. Proud of her numerous progeny, she provoked the anger of Apollo and Artemis (Diana), by boasting over their mother Leto (Latona), who had no other children but those two. She was punished by having all her children put to death by those two deities. She herself was metamorphosed by Zeus (Jupiter) into a stone which shed tears during the summer. This fable has afforded a subject for art, and has given rise to the beautiful group in the tribune at Florence, known by the name of Niobē and her Children.

Niobium (nī-ō′bi-um), or COLUMBIUM, a rare metal discovered in 1801, in a black mineral called columbite from North America. It forms a black powder insoluble in nitric acid, but readily soluble in a mixture of nitric and hydrofluoric acids. Symbol Nb. Atomic weight 98.

Niort (ni-ōr), a town in Western France, capital of the department of Deux-Sèvres, on two hills washed by the Sèvre-Niortaise, 79 miles southeast of Nantes. Its town house and old castle are interesting buildings. The staple manufactures are leather and gloves, and the trade, particularly in claret, is extensive. Pop. (1906) 20,538.

Nipa (nē′pa), a genus of palms of which there is but one species, *N. fruticans*, a native of the East Indies, Philippines, etc., growing on marshy coasts. It has no stem, fronds about 20 feet long, and edible fruits. The fronds

are used by the natives for a variety of purposes.

Niphon, or NIPON. See *Japan.*

Nipigon (nip'i-gon), or NEP'IGON, a lake of Canada, in Ontario, about 30 miles northwest of Lake Superior. It is about 70 miles long and 40 miles broad, with rugged headlands, deep bays, and many islands. It is connected with Lake Superior by the Nipigon river.

Nipissing (nip'i-sing), LAKE, a lake of Canada, in Ontario, N. E. of Lake Huron, irregular in coast line; breadth, about 30 miles; length, 48 miles. It contains many islands, its outlet being by French River into Lake Huron.

Nipple. See *Mammary Glands.*

Nipplewort (nip'l-wurt), a plant of the genus *Lapsăna* (*L. communis*), nat. order Compositæ, growing commonly as a weed by the sides of ditches and in waste places.

Nirva'na. See *Buddhism.*

Nisami (ne-zâ'mē), full name ABU MOHAMMED BEN JUSUF SHEIKH NISÂM-ED-DIN, one of the great poets of Persia, and the founder of the romantic epic, born about 1100, was a special favorite of the Seljuk princes, who then ruled in Persia; died in 1180. Besides a *Divan*, or collection of lyrics, he wrote five larger poems, which have been extensively circulated in Persia and India.

Nisan (nī'zan), a month of the Jewish calendar, the first month of the sacred year and seventh of the civil year, answering nearly to our March. It was originally called Abib, but began to be called Nisan after the captivity.

Nish (nēsh), or NISSA (nis'sa), a fortified town in Servia, on the Nishava, 130 miles S. E. of Belgrade. It is the seat of a Greek bishop, and has celebrated hot springs and baths. It was the native place of the Emperor Constantine the Great. Pop. (1900) 24,451.

Nishapur (nesh'â-pör), an ancient city in Persia, province of Khorasan, 50 miles west by south of Mushed. Turquoises of excellent quality have long been found in its vicinity. Omar Khayyam was born here in 1123. Pop. about 15,000.

Nisibis (nis'i-bis), anciently a famous town in Mesopotamia, on the river Mygdonius. It is now called Nisibin, and is a small ruinous place.

Nisi prius (nī'si prī'us), a phrase in English law meaning 'unless before,' and occurring originally in a writ by which the sheriff of a county was commanded to bring the men impaneled as jurors in a civil action to the court at Westminster on a certain day, 'unless before' that day the justices came thither (that is, to the county in question) to hold the assizes, which they were always sure to do. The judges of assize, by virtue of their commission of *nisi prius*, try the civil causes thus appointed in their several circuits, being said to sit at *nisi prius*, and the courts in which these actions are tried being called courts of *nisi prius*, or *nisi prius* courts. A trial at *nisi prius* may be defined in general as a trial, before a judge and jury, of a civil action which has been brought in one of the superior courts. The phrase has been introduced, with the same meaning, in the United States courts.

Nitrate (nī'trāt), a salt of nitric acid. The nitrates are generally soluble in water, and easily decomposed by heat. Deposits of nitrates are present in small quantities in almost all soils, but enormous accumulations exist in Chile and Peru, though they are being rapidly exhausted. These latter deposits, which are known as Chile saltpeter, cubic niter, or nitrate of soda, are found near the coast, and were probably developed from remains of marine animals and birds. The great value of this nitrate is in its application to agriculture as a fertilizer on impoverished soil; for it is now well known that crops require large quantities of nitrogen to secure their full development. It has been found by experiment, for instance, that with a soil poor in nitrogen the crop of wheat per acre was 2090 lbs., whereas when the same soil was dressed with nitrogenous manure the return was 6982 lbs. So also with potatoes, the poor soil yielded 4452 lbs. as compared with 17,192 lbs. when dressed with nitrate. The nitrates, of which nitrate of soda is now considered the best, should not be used on light porous soils where the rain will sink the manure below the range of the roots. They make an excellent top-dressing in the spring, especially for root crops. See also *Cubic Niter.*

Nitrate of Silver, a substance obtained by cooling, in the shape of tabular crystals, from the solution produced when silver is oxidized and dissolved by nitric acid diluted with two or three times its weight of water. When fused the nitrate is of a black color, and it may be cast into small sticks in a mold; these sticks form the *lunar caustic* employed by surgeons as a cautery. It is sometimes employed for giving a black color to the hair, and is

the basis of the indelible ink for marking linen. Its solution is always kept in the laboratory as a test for chlorine and hydrochloric acid.

Nitrate of Soda, a salt analogous in its chemical properties to nitrate of potash or niter. It is largely used as a manure, and as a source of nitric acid and niter. See *Nitrate.*

Niter (nī'tėr) (KNO_3), a salt, called also saltpeter, and in the nomenclature of chemistry nitrate of potassium or potassic nitrate. It is produced by the action of microbes in soils containing potash and nitrogenous organic matters, and forms an efflorescence upon the surface in several parts of the world, and especially in the East Indies, whence much niter is derived. In some parts of Europe it is prepared artificially from a mixture of common mold or porous calcareous earth with animal and vegetable remains containing nitrogen. It is also manufactured on a large scale by crystallization from a hot solution of chloride of potassium and nitrate of soda. It is a colorless salt with a saline taste, and crystallizes in six-sided prisms. It is employed in chemistry as an oxidizing agent and in the formation of nitric acid. Its chief use in the arts is in the making of gunpowder. It also enters into the composition of fluxes, and is extensively employed in metallurgy; it is used in the art of dyeing, and is much employed in the preservation of meat and animal matters in general. In medicine it is prescribed as cooling, febrifuge and diuretic. —*Cubic niter.* See *Nitrate.*

Nitric Acid (nī'trik), (HNO_3), the most important of the five compounds formed by oxygen with nitrogen. When pure it is a colorless liquid, very strong and disagreeable to the smell, and so acrid that it cannot be safely tasted without being much diluted. It is known in the arts as *aqua fortis*, and is commonly obtained by distilling niter (potassium nitrate) or Chile saltpeter (sodium nitrate) with strong sulphuric acid. Nitric acid contains about 76 per cent. of oxygen, a great part of which it readily gives up to other substances, acting thus as a powerful oxidizer. Thus many metals—such as copper. tin, silver, etc.—when brought into contact with this acid are oxidized at the expense of the acid with the production of lower oxides of nitrogen and an oxygenated metallic salt. Nitric acid, when moderately dilute, acts on organic bodies so as to produce a series of most useful substances, notably acetic, oxalic and picric acids, isatin or white indigo, etc. When strong acid is used, nitro-compounds oftentimes result, containing the group NO_2 in place of part of the hydrogen of the original substance; thus we get *nitrophenol, nitrobenzol,* etc. By replacement of the hydrogen in nitric acid a series of salts termed *nitrates* is obtained. (See *Nitrate.*) When nitrates are heated with combustible bodies an explosion is generally produced. A mixture of strong hydrochloric and nitric acids is known as *aqua regia, nitromuriatic,* or *nitrohydrochloric acid.* Nitric acid is employed in etching on steel or copper; as a solvent of tin to form with that metal a mordant for some of the finest dyes; in metallurgy and assaying; also in medicine, in a diluted state, as a tonic and as a substitute for mercurial preparations in syphilis and affections of the liver; and also in form of vapor to destroy contagion.

Nitrides (nī'trīdz), a general designation for the compounds of nitrogen with other elements or radicles, but more especially for those compounds which nitrogen forms with phosphorus, boron, silicon and the metals.

Nitrification (nī-tri-fī-kā'shun), the conversion of nitrogenous organic matter or compounds of ammonia into nitrates, thus bringing them into a condition suitable for plant assimilation. Aside from this chemical method of nitrification, there is abundant reason to believe that the nitrogen of the air directly undergoes a similar change, especially in view of the fact that plants take up more nitrogen than the soil seems capable of furnishing. Recent research has shown that nitrogen may be fixed in the soil by the action of certain micro-organisms which occur in considerable variety and in great abundance, and which also occur as parasites on the roots of leguminous plants. For this reason the growth of plants of this family—peas, clover, alfalfa, etc., enrich instead of depleting the soil. Various methods are now employed by the aid of electric power to produce nitrates fitted for plant food and with a promising cheapness. Also nitrifying bacteria are cultivated in great numbers and supplied to farmers in condition to sow in the soil. These methods are very promising for the future of agriculture.

Nitrites. See *Nitrogen.*

Nitro-benzol ($C_6H_5NO_2$), a liquid prepared by adding benzol drop by drop to fuming nitric acid. It closely resembles oil of bitter almonds in flavor, and is largely employed as a substitute for that oil in the manufacture

of confectionery and in the preparation of perfumery. It is important as a source of aniline.

Nitro-compounds, compounds of carbon which are formed from others by the substitution of the monatomic radicle NO_2 for hydrogen.

Nitrogen (nī'tru-gen), an important elementary principle, the basis of nitric acid and the principal ingredient of atmospheric air. Its symbol is N, its equivalent 14, and its specific gravity 0.9713. It is a colorless, invisible gas, called by Lavoisier *azote* (Greek, *a*, privative, *zōē*, life), because it is incapable of supporting life. The name nitrogen was applied to it by Chaptal, because of its entering into the composition of niter, nitric acid, etc. The atmosphere contains about four-fifths of its volume of nitrogen, the rest being principally oxygen; niter contains nearly 13 per cent., and nitric acid about 22 per cent. by weight of this substance. Nitrogen is inodorous, tasteless, incombustible, and a very inert substance in itself, although many of its compounds, such as nitric acid and ammonia, are possessed of great chemical activity. By reason of its inertness and general slowness of chemical action it acts the part of a diluent of oxygen in the atmosphere. Having no marked action of its own on living beings, its admixture with the oxygen of the air serves to moderate the otherwise too violent action of the latter gas. Under certain circumstances nitrogen may be induced to combine with other elements, especially with hydrogen, oxygen, and carbon, with titanium, tantalum and tungsten. Nitrogen is allied in many of its chemical properties to the other elementary substances—phosphorus, arsenic, antimony and bismuth; and it has the power of combining with one, three, or five atoms of a monovalent element or radicle. The oxides of nitrogen are five in number. The first oxide of nitrogen (nitrogen *monoxide*) contains 28 parts by weight of nitrogen united with 16 parts by weight of oxygen; its chemical formula is N_2O. The next oxide (*dioxide*) contains 28 parts by weight of nitrogen united with 32 parts by weight of oxygen; its formula is N_2O_2. In the third oxide (*trioxide*) 28 parts of nitrogen is united with 48 parts of oxygen, and to it the formula N_2O_3 is assigned; while the fourth and fifth oxides (*tetroxide*, *pentoxide*) contain respectively 64 and 80 parts of oxygen, united in each case with 28 of nitrogen; to these the formulæ N_2O_4 and N_2O_5 are given. These oxides may be all produced from nitric acid. The *trioxide* forms a dark-blue liquid, which, when added to water at 0°, combines therewith, forming *nitrous acid*, HNO_2. This solution acts as a reducing agent, inasmuch as it eliminates gold and mercury as metals from several of their salts; on the other hand, it also exercises an oxidizing action on such salts as ferrous sulphate, potassium iodide, etc. By replacement of the hydrogen in nitrous acid a series of metallic salts is obtained, called *nitrites*. Nitrogen monoxide is better known by the name of 'laughing gas,' from the peculiarly exhilarating effect which it produces when breathed along with a little air. If the gas be pure, its inspiration soon brings about total insensibility, which does not continue long, and generally produces no bad effects upon the person who breathes it; hence it is much used as an anæsthetic in minor surgical operations, such as teeth drawing, etc.

Nitro-glycerine (nī'trō glis'ĕr-in), an explosive substance appearing as a colorless or yellowish oily liquid, heavier than and insoluble in water, but dissolved by alcohol, ether, etc. It may be prepared by adding to 350 parts by weight of glycerine 2800 parts by weight of a cooled mixture of 3 parts of sulphuric acid of 1.845 specific gravity and 1 part of fuming nitric acid. The liquid is poured into ten or twenty times its bulk of cold water, when the heavy nitro-glycerine sinks to the bottom. When violently struck nitro-glycerine explodes, being resolved into water, carbonic acid, nitrogen oxides, and nitrogen. The volume of gas produced is about 10,000 times the initial volume of the nitro-glycerine. Explosion can also be effected by heating to about 500° F. one portion of a mass, whereby a partial decomposition is produced which almost immediately propagates itself throughout the liquid. The explosive force of nitro-glycerine compared with that of an equal volume of gunpowder is as 13:1. If any traces of acid be allowed to remain in nitro-glycerine it is liable to undergo spontaneous explosion; hence it is an exceedingly dangerous article to transport or store under such conditions. It is advisable to prepare the substance on the spot where it is to be used, and only in such quantities as may be required for immediate consumption. This method is adopted in many quarries and engineering undertakings, especially in America. Nitro-glycerine is largely used in the form of *dynamite*, to produce which it is mixed with some light absorbent substance. Thus treated it becomes much less dangerous. See *Dynamite*.

Nitromuriatic Acid. See *Nitric Acid.*

Nitron (nī'tron), radium emanation. This name was given to the emanation by Sir William Ramsay and Dr. Gray, who regard it as a new gaseous element.

Nitrous Acid. See *Nitrogen.*

Nitrous Oxide. See *Nitrogen.*

Niuchwang. See *Newchwang.*

Nivelles (ni-vell; Flemish, *Nyvel*), a town of Belgium, province of Brabant, on the Thines, 18 miles south of Brussels, which has manufactures of woolen, cotton, linen and paper, as well as railway locomotive and car works. The church of St. Gertrude is an edifice in the Romanesque style. Pop. 12,109.

Nivernais (ni-ver-nā), formerly one of the provinces of France, corresponding nearly to the present department of Nièvre.

Nivose (nē-vōz; literally 'snow month'), the name given in the French revolutionary calendar to a winter month beginning December 21 and ending January 19.

Nix, or NIXIE, in German popular mythology, the name of water spirits (male and female), haunting rivers, brooks, ponds and lakes. The male nixie is sometimes represented as old, sometimes as young, but generally as a malicious being. The female nixie appears as a blooming maiden, who often falls in love with some young man, whom she entices or draws into the water.

Nixdorf (niks'dorf), a town in northern Bohemia, with manufactures of cutlery, tools, and other steel wares, fancy goods, etc. Pop. 7109.

Nizam (ni-zam'). in the East Indies, the title of the ruler of Hyderabad in the Deccan, derived from *Nizam-ul-mulk*, governor or regulator of th State, a name adopted by Azof Jah in 1719, and since that time adopted by his successors.

Nizam's Dominions. See *Hyderabad.*

Nizza. See *Nice.*

Noah (nō'a), one of the patriarchs of the Old Testament, son of Lamech, is described in the book of Genesis as being chosen by God for his piety to be the father of the new race of men which should people the earth after the deluge. Having been warned by God of the coming flood, he built a vessel (the *ark*) by His direction, and entered it with his family and all kinds of animals. (See *Deluge.*) After the waters had subsided the ark rested on Mount Ararat, where Noah offered a thank-offering to God, and was assured that the earth should never again be destroyed by a flood, as a sign whereof God set the rainbow in the clouds. Noah is said to have died at the age of 950 years, 350 years after the flood. While modern accounts place Mount Ararat in Armenia, older traditions locate it in the mountains of the Kurds, east of the Tigris.

Noailles (nō-ī), one of the oldest noble families in France. Among the most distinguished of the family was ADRIEN MAURICE, Duke of Noailles, born in 1678; died in 1766. He served in Spain in the Spanish war of Succession, was created grandee of Spain, and in 1698 married a niece of Madame de Maintenon. During the minority of Louis XV he was president of the council of finance and member of the council of regency, which he left, however, in 1721, rather than concede the presidency to Cardinal Dubois. Exiled by the influence of Dubois, he was, on the death of the latter, recalled and reinstated in his former offices. At the siege of Philipsburg he received the marshal's staff. In 1735 he commanded the French army in Italy. During the Austrian war of Succession he held a command on the Rhine; and in 1743, through the impetuosity of his nephew, the Count of Grammont, he lost the battle of Dettingen.

Nobel (nō'bel), ALFRED, a Swedish inventor, born at Stockholm in 1833; died in 1896. His father was a manufacturer of nitro-glycerine. by experimenting with which the son discovered the art of making dynamite (which see). He also invented smokeless powder and several kinds of blasting powder. His inventions brought him great wealth, and by will he left a sum of over $9,000,000, the income of which was to be divided into five parts and annually awarded for the most important discoveries in physics, chemistry, and physiology or medicine; for the most remarkable idealistic literary work, and for the greatest service rendered to the cause of peace during the year. The annual distribution of these prizes among those most distinguished in these fields of effort has become an important event. Each prize amounts to about $40,000.

Nobert's Test-plates, finely-ruled glass plates so named from F. Nobert, a German optician, used for testing the power of microscopes. The rulings are executed on the under surface of a piece of exceedingly thin glass by means of a diamond

point. Some of these ruled plates have the almost incredible number of 225,187 spaces to the inch.

Nobility (nō-bil′i-ti), a rank or class of society which possesses hereditary honors and privileges above the rest of the citizens. Such a class is found in the infancy of almost every nation. Its origin may be attributed to military supremacy; to the honors paid to superior ability, or to the guardians of the mysteries of religion. Among the ancient Romans the patricians originally formed the nobility; but a new order of nobility arose out of the plebeians, consisting of those who had held curule magistracies and their descendants, enjoying the right of having images of their distinguished ancestors. Among the ancient German tribes only obscure traces of hereditary nobility are found. The dignities of the counts of the Franks, the aldermen and great *thanes* of England, as also of the *jarls* (in England *eorlas*) of Denmark, were accessible to every one distinguished by merit and favored by fortune. In Venice a civic nobility grew up consisting of a series of families who gradually acquired all political power and kept it to themselves and their descendants. In England hereditary nobility, the nobility belonging to the titles of duke, marquis, earl, viscount and baron, is now entirely personal, though formerly, as a result of the Norman conquest, it was connected with the holding of lands. In Spain and Italy the same rank depends in greater measure upon property; and in France and Germany the *de* and *von* of titles points to the same fact. In France and Germany nobility is common to all the members of the noble family, and the German nobility form a very exclusive caste. In France and Germany the nobles long formed a class of petty sovereigns within their own domains. The French revolution first deprived the nobles of that country of their privileges and exclusive rights, as that of jurisdiction, etc.; and the decree of June 19, 1790, abolished hereditary rank entirely. Under Napoleon I arose a new hereditary nobility, with the titles of princes, dukes, counts, barons and chevaliers, which descended to the eldest son. After the restoration of the Bourbons (1814) the ancient nobility reclaimed their former rights and privileges. Nobility was again abolished in 1848, but was restored by Napoleon III. In Norway the parliament abolished nobility by the three successive decrees of 1815, 1818 and 1821. In Great Britain titles of nobility can only be conferred by the sovereign, and that by patent, in virtue of which they become hereditary. Life peerages also are occasionally conferred. The nobility, as the term is commonly used, consists of those holding the titles already mentioned (or all above the rank of baronet) and their more immediate connections; but if the term were to be used as generally in Europe the gentry would also be included, or all families entitled to bear coat-armor. Those of the nobility who are peers of England, of Great Britain, or of the United Kingdom, have a hereditary seat in the House of Lords, while the Scottish peers elect sixteen of their number to represent their order, and the Irish peers elect twenty-eight representatives for the same purpose. See also *Britain* (sections *Parliament* and *Ranks* and *Titles*) and *Peer*. The institution of nobility has never been introduced into the United States or any of the other American republics.

Noble (nō′bl), an ancient English gold coin, value six shillings and eightpence, first struck in the reign of Edward III, 1344. The noble having increased in value to 10*s*., a coin of the former value of a noble was issued by

Noble of Edward III. A, Actual diameter of the coin.

Henry VI and Edward IV, and called an *Angel* (which see). Half-nobles and quarter-nobles were also in circulation at the same period.

Noblesville, a city, capital of Hamilton County, Indiana, on the White River, 22 miles N. N. E. of Indianapolis. It has manufactures of iron, strawboard, carriages, etc. Pop. 5073.

Nocera (nō-chā′rå), a cathedral city of South Italy, province Salerno. It carries on cotton spinning and weaving. Pop. 11,933.

Noctiluca (nok-ti-lū′ka), a minute genus of marine animals placed among the Infusoria or the Rhizopoda, which in size and appearance much resemble a grain of boiled sago, or a little granule of jelly, with a long stalk. These minute animals are phosphorescent; and the luminosity which appears on the surface of the sea during the night is chiefly due to them.

Nocturne (nok-tėrn′), in painting, a nightpiece; a painting exhibiting some of the characteristic effects of night light. In music, a composition in which the emotions, particularly those of love and tenderness, are developed. It has become a favorite style of composition with modern pianoforte composers.

Noddy (nod′i; *Anöus stolidus*), a seabird of the family Laridæ (gulls), widely diffused through the northern and southern hemispheres, and well known to sailors for its fearlessness or stupidity, allowing itself even to be taken by the hand; hence its name. The noddy is very abundant in warmer climates, as in the West Indies. There are several other species differing somewhat in details from *A. stolidus*.

Node (nōd), in astronomy, one of the points in which two great circles of the celestial sphere, such as the ecliptic and equator, the orbits of the planets and the ecliptic, intersect each other; and also one of the points in which the orbit of a satellite intersects the plane of the orbit of its primary. The node at which a heavenly body passes or appears to pass to the north of the plane of the orbit or great circle with which its own orbit or apparent orbit is compared is called the *ascending node;* that where it descends to the south is called the *descending node.* At the vernal equinox the sun is in its ascending node; at the autumnal equinox in its descending node. The straight line joining the nodes is called the *line of the nodes.* The *lunar nodes* are the points at which the orbit of the moon cuts the ecliptic.

Node, in physics, a point in a vibrating body, or system of vibrating particles, where there is no movement. When a body is vibrating, the vibratory motion is conveyed from one place to another by the action of the molecular forces of the particles on one another. Now when all the forces acting on a certain particle are at any instant in equilibrium, and the particle consequently remains at rest, there is said to be a *node* at the particle. If a plate of glass or metal be held in the hand, and a bow be drawn across the edge, particles of fine sand, previously placed on the plate, will arrange themselves in lines, along which it is evident no vibration has taken place. These lines, called *nodal lines,* generally form geometrical figures.

Nodier (nod-i-ā), CHARLES, a versatile French writer, born in 1780; died in 1844. At first a republican, then an ardent royalist, he lived an adventurous life till 1824, when he became librarian to the Bibliothèque de l'Arsenal. He wrote tales, romances, satires, dictionaries, travels, works on entomology, etc., and was a friend of all the literary men of the time, and had a certain influence on the Romantic school of French authors, including Hugo, Dumas, etc.

Nodosaria (nō-do-sā′ri-a), a genus of fossil foraminifers, having a shell composed of numerous chambers arranged in a straight line. They occur in chalk, tertiary, and recent formations.

Nogent-le-rotrou (nō-zh äṇ-lė-rō-trö), a town of Northern France, dep. Eure-et-Loir, 33 miles W. S. W. of Chartres, at the foot of a steep hill on which the old castle of Sully, Henry IV's minister, stands. It has manufactures of woolens, leather, etc. Pop. (1906) 6884.

Nogent-sur-Marne, a suburban village of Paris on the Marne, a little to the east of the capital. Pop. (1906) 11,463.

Nogi, a Japanese soldier, born in 1842. He took part in the revolution of 1868, in the suppression of the Satsuma rebellion of 1877, in the war with China, 1894-95, and was afterwards governor of Formosa. In the war with Russia he commanded the army that captured Port Arthur. On September 13, 1912, in accordance with an ancient Japanese custom, General Nogi and his wife died by their own hands in final tribute to the dead emperor, Mutsuhito.

Noirmoutier (nwår-mö-tyā), an island of Northwestern France, separated from the coast of Vendée by a narrow and shallow channel. It is about 10 miles long, with a breadth varying from 1 to 3 miles, and is generally fertile. Pop. (1906) 8388. The chief town, of the same name, has good anchorage and a productive oyster fishery. Pop. 2085.

Noisseville (nwås-vēl), a village of German Lorraine to the east of Metz, the scene of a fiercely contested battle during the Franco-German war, 1870, between the forces of Prince Frederick Charles and those of Marshal Bazaine.

Nola (nō′lå), a town of Southern Italy, and a bishop's see, near Naples, in Caserta, said to have been built by the Etrurians before Rome. Pop. 11,927.

Noli-me-tangere (Lat. 'touch me not'), the name of a plant. See *Impatiens.*

Nollekens (nol′e-kenz), JOSEPH, an English sculptor, son of an Antwerp painter, born in London in 1737; died in 1823. He was placed early under Scheemakers, and in 1759 and

1760 gained premiums from the Society of Arts. Going subsequently to Rome, he had the honor of receiving a gold medal from the Academy of Painting and Sculpture. On his return to England in 1770 he was elected an Associate of the Royal Academy (1771) and a Royal Academician (1772). His *Venus with the Sandal* is his principal ideal production; but his professional reputation rests mainly upon his portrait busts.

Nolle Prosequi (n o l'le pros'e-kwī; Lat. 'to be unwilling to prosecute'), in law, a stoppage of proceedings by a plaintiff, an acknowledgment that he has no cause of action.

Nomads (nom'adz), tribes without fixed habitations, generally engaged in the tending and raising of cattle, and changing their abode as necessity requires or inclination prompts. North Africa, the interior of North and South America, and the northern and middle parts of Asia, are still inhabited by nomadic tribes, who are bandits and robbers.

Nome (nōm), the largest city in Alaska, situated in the Northern district, on the coast of Bering Sea, and in an important gold-producing area. Pop. (1910) 2600.

Nominalism (nom'i-nal-izm), the doctrines of those scholastic philosophers who followed John Roscelin, canon of Compiègne in the eleventh century, in maintaining that general notions (such as the notion of a tree) have no realities corresponding to them, and have no existence but as names (*nomina*) or words. They were opposed by the *realists*, who maintained that general ideas are not formed by the understanding, but have a real existence independent of the mind and apart from the individual object. During the twelfth century the controversy between the nominalists and the realists was carried on with great keenness, and in the beginning of the fourteenth the dispute was revived by the English Franciscan William of Occam, a disciple of the famous Duns Scotus. The controversy, long continued, gave rise to actual persecution.

Non-activity. See *Neutrality.*

Non-commissioned Officer, one who, while he is not commissioned as an officer, holds an appointment by virtue of which he exercises authority over the private soldiers. Such are sergeant-majors, q u a r t e rmaster-sergeants and sergeants.

Non Compos Mentis ('not of sound m i n d'), an expression used of a perso.1 who is not of sound understanding, and therefore not legally responsible for his acts.

Nonconformists (n o n-k o n-form'-istz), those who refuse to conform to an established church. The name was first applied to those English clergymen who, at the Restoration, refused to subscribe to the Act of Uniformity, and were in consequence ejected from their livings. Relief was afforded by the Toleration Act of 1689. The repeal of the Corporation and Test Acts in 1828 removed the civil disabilities under which Nonconformists had previously been placed, and religious tests at the universities were abolished in 1871 and 1873. See *England* (*Ecclesiastical History*).

Non-effective, the term applied in military language to designate that portion of the forces not in active service or not in a condition to proceed to active service, such as retired officers, pensioners, and the like.

Nones (nōnz), (1) in th. Roman calendar, the fifth day of the months January, February, April, June, August, September, November and December, and the seventh day of March, May, July and October. The *nones* were so called as falling on the *ninth* day before the ides, both days included. (2) The office for the ninth hour, one of the breviary offices of the Roman Catholic Church.

Nonjurors (n o n-jö'rerz), those who refused to take the oath of allegiance to the government and crown of England at the Revolution, when James II abandoned the throne. See *England* (*Ecclesiastical History*).

Nonnus (non'us), or NONNOS, a later Greek poet, born at Panopolis, in Egypt, who lived about the beginning of the fifth century A.D. He is the author of a poem entitled *Dionysiaca*, in forty-eight books, in which the expedition of Bacchus (Dionysius) to India is described; also of a paraphrase, in Greek hexameters, of the Gospel of St. John.

Non-residence, failure or neglect of residing where official duties require one to reside, or on one's own lands; especially residence by clergymen away from their cures. A beneficed clergyman of the English Church absenting himself without license from his bishop for more than three months in any year is liable to forfeit part of his emoluments.

Non-resistance, submission to authority, power, or usurpation without opposition. This used to be inculcated by the believers in the

doctrine of the divine right (which see) of kings.

Nonsuit (non'sūt), a term in law. When a person has commenced an action, and at the trial fails in his evidence to support it, or has brought a wrong action, he is nonsuited. A nonsuited plaintiff may afterwards bring another action for the same cause, which he cannot do after a verdict against him.

Nootka (nöt'ka), an island of Canada on the west coast of Vancouver Island, at the entrance of Nootka Sound, an inlet running about 10 miles inland.

Nootka-dog, a large variety of dog domesticated by the Indians of Nootka Sound, chiefly remarkable for its long wool-like hair, which when shorn off holds together like a fleece, and is made into garments.

Noraghe (no-rä'gā). See *Nuraghi.*

Nord (nōr), a department in the northeast of France, bordering with Belgium; area, 2170 square miles. The coast, marked by a long chain of sandy hillocks, furnishes the two harbors of Dunkirk and Gravelines. The interior is a monotonous but fertile alluvial flat, intersected by sluggish streams and canals. The husbandry, nearly akin to that of Flanders, is careful, skilful and productive. The principal minerals are coal and iron, which are extensively mined; and the occupations connected with or depending on them render this department among the most important in France. The capital is Lille. Pop. 1,895,861.

Nordau (nor'da), Max Simon, author, born of Jewish ancestry at Budapest, Hungary, in 1849. He became a physician, wrote works of travel, but became widely known by the pessimistic views of society and literature expressed in his *Conventional Lies of Society, Paradoxes and Degeneration.* In the latter he maintained that much in contemporary life and literature is evidence of physical and mental degeneration. He also wrote dramas, poems and novels.

Norden (nōr'den), a seaport of Prussia, in Hanover, 16 miles north of Emden, on a canal which at a short distance communicates with the sea. Pop. (1905) 6717.

Nordenfeldt (nor'den-felt), a Swedish engineer, born in 1844, the inventor of a machine-gun which bears his name, also of several torpedoes and a submarine boat.

Nordenskiöld (nor'den-sh*eu*ld), Nils Adolf Erik, Baron, a Swedish naturalist and explorer, born at Helsingsfors in 1832. He devoted himself to science, and was appointed to some important posts, but becoming obnoxious to the Russian authorities he settled in Sweden. In 1851 he went with an expedition to Spitzbergen, to which he several times returned, assisting in the measurement of an arc of the meridian and mapping the southern part of Spitzbergen. On a North Polar expedition in 1868 Nordenskiöld reached the high lati-

Baron Nordenskiöld.

tude of 81° 42′. Having turned his attention to Siberia, after making two successful voyages through the Kara Sea to the Yenissei, he decided to attempt the accomplishment of the northeast passage, or passage by sea round Northern Asia to the Pacific. Aided by the King of Sweden and others, Nordenskiöld was enabled, July, 1878, to sail in the *Vega*, and succeeded in his project, his vessel doubling the most northern point of the Old World, Cape Tchelyuskin. After passing through Bering Strait it reached Japan, September 2, 1879. The object of the expedition being thus accomplished, Nordenskiöld was enthusiastically welcomed in Europe and created a baron by the King of Sweden. He published reports of his several voyages and died in 1901.

Norderney (nor'der-nī), a small island belonging to Prussia, on the coast of East Friesland, reachable on foot at low tide; area, about 5 square miles; pop. 3888, chiefly fishermen of the old Frisian stock. At the southwest end of the island is a village famous as a sea-bathing place throughout Germany, and visited annually by some 13,000 persons.

Nordhausen (nord'hou-zn), a town in Prussian Saxony, 38 miles N. N. W. of Erfurt, pleasantly sit-

uated at the foot of the Harz Mountains. It has a Roman Catholic cathedral, a fine late Gothic edifice with a Romanesque crypt, an old town house, etc. It manufactures woolen and linen cloth, lacquer ware, chemicals, etc., and has extensive distilleries and breweries. Pop. (1905) 29,882.

Nördlingen (neurd'ling-ėn), a walled town of Bavaria, near the Würtemberg frontier, with well-preserved walls and towers, and a handsome Gothic church, surmounted by a remarkable tower 345 feet high. Manufactures carpets, woolen and linen goods, leather, etc. The Swedes were defeated here September 6, 1634. (See *Thirty Years' war.*) Pop. (1905) 8512.

Nordstrand (nort'strant), an island of Prussia, on the west coast of Schleswig; area, 21 square miles. The greater part of it was swept away in 1634 by a flood, which drowned 15,000 persons. Pop. 2263, Frisians by origin.

Nore (nōr), (1) A part of the estuary of the Thames, about 50 miles below London, and east of Sheerness, encumbered with sandbanks, on one of which is a floating light.—(2) A river of Ireland, rising in the Sliebhbloom Mountains, on the borders of Tipperary and Queen's County, and joining the Barrow about 2 miles above New Ross; length 70 miles. It admits vessels of considerable size as far as Inistioge, and barges to Thomastown.

Norfolk (nōr'fok), a county of England, having the North Sea on the N. E. and the Wash on the N. W., its area 2037 sq. miles. The coast consists principally of cliffs, partly chalk and partly alternate strata of clay, gravel, loam and sand. These are gradually being undermined by the sea, which is in many places making inroads on the land. Considerable areas on the coast of the Wash, however, have been reclaimed from the sea. The Yare and its tributaries expand near the sea into meres or *broads*, which, largely covered with bulrushes and sedges, are the resort of a great variety of water-fowl. This county has a high reputation for its progress in agriculture. The crop raised in greatest perfection is barley, which is its chief agricultural produce. Most of it is made into malt, and then sent elsewhere. The manufactures consist chiefly of woven goods. Norfolk has extensive fisheries of both herrings and mackerel, the former being the most important. The county town, Norwich; the chief seaport is Yarmouth. Pop. (1911) 488,630.

Norfolk, a city and port in the county of the same name, Virginia, on the Elizabeth River, 32 miles from the ocean. It is 83 miles S. E. of Richmond, and is next to it in size among the cities of Virginia. In connection with Portsmouth it is the most important naval station in the United States, and has a large, safe and easily accessible harbor, admitting vessels of the largest class. The entrance to it is defended by Fortress Monroe. It is one of the chief coaling stations of the world, and has a large shipping trade in cotton, grain, early fruits and vegetables, peanuts, oysters, etc. There are various manufactures and ship and boat yards. At the outbreak of the Civil war it was the chief naval station of the Confederate States. Pop. 67,452.

Norfolk, a city in Madison County, Nebraska, on the north branch of Elkhorn River, about 50 miles N. of Columbus. It has cereal mills, threshing machine and beet-sugar factories, etc. Pop. 6025.

Norfolk-crag, in geology, an English tertiary formation belonging to the older Pliocene, resting on the chalk and London-clay. It consists of irregular beds of ferruginous sand-clay, mixed with marine shells, and mastodon and elephant remains have been discovered.

Norfolk Island, an island in the South Pacific, about 800 miles east of New South Wales, with which it is governmentally connected, is about 6 miles long by 4 broad, and has a fertile soil and salubrious climate, readily producing sweet potatoes, various tropical fruits, wheat, maize, etc. The coasts are precipitous and there is no good landing place. At one point it rises to the height of 1050 feet. The Norfolk Island pine grows to a great size, but is now comparatively scarce. Discovered uninhabited by Captain Cook in 1774, it was long used as a penal settlement, with New South Wales, and in 1856 it was assigned to the Pitcairn Islanders for their residence. (See *Pitcairn Island.*) These descendants of the mutinous crew of the *Bounty* were long represented as a community living in almost primitive innocence and simplicity, but recent reports hardly bear out the rosy picture. Their numbers amounted in 1885 to 481, not including the members of the mission station founded in 1867 and carried on under the Bishop of Melanesia. This station is intended as a center from which Christianity may be propagated in the Pacific; it has a farm of 1000 acres and educates about 150 Polynesian boys and girls besides native pastors.

Norfolk Island Pine, a tree of the genus *Araucaria* (*A. excelsa*), nat. order Coniferæ, formerly abounding on Norfolk Island, where it attains a height of 200 feet or more, with a diameter of 10 or 11 feet. Its timber is valuable, being white, tough and close-grained. It is one of the most beautiful of trees. Though an *Araucaria* it is very unlike the common species (*A. imbricāta*).

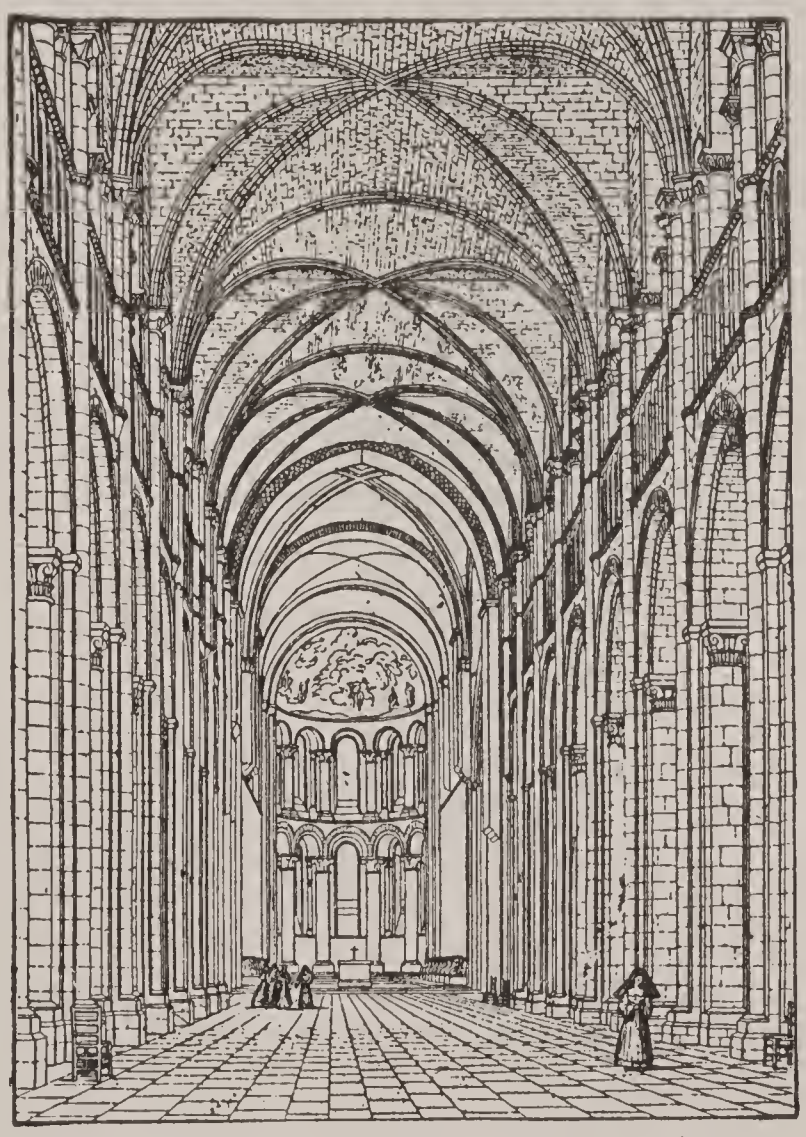
Noria (nō′-ri-a), a hydraulic machine used in Spain, Syria, Egypt, and other countries for raising water. It consists of a water-wheel with revolving buckets or earthen pitchers, like the Persian wheel, but its modes of construction and operation are various. As used in Egypt it is known as the *sakieh*. These machines are generally worked by animal power, though in some countries they are driven by the current of a stream acting on floats or paddles attached to the rim of the wheel.

Noric Alps. See *Alps*.

Noricum (nor′i-kum), the Roman name of a region that corresponded nearly to what is now Upper and Lower Austria and Styria.

Normal (nōr′mal), in geometry, a perpendicular; the straight line drawn from any point in a curve at right angles to the tangent at that point; or the straight line drawn from any point in a surface, at right angles to the tangent plane at that point.

Normal Schools, called also TRAINING COLLEGES, schools in which teachers are instructed in the principles of their profession and trained in the practice of it. The name is derived from the French *écoles normales*, established at the close of the eighteenth century. These schools are now numerous in all countries that have a well-organized system of education. They may be either for teachers in elementary schools or for those of the secondary schools, and may be for either sex only or for both combined. In the United States the normal school is an important part of the system of public school education.



Norman Architecture—Abbaye aux Dames, Caen.

Norman Architecture (nōr′man), the round arched style of architecture, a variety of the Romanesque, introduced at the Norman Conquest from France into Britain, where it prevailed till the end of the twelfth century. In its earlier stages it is plain and massive with but few moldings, and those principally confined to small features; as the style advanced greater lightness and enrichment were introduced, and some of the later examples are highly enriched. The chevron, billet, nail-head and lozenge moldings are distinctively characteristic of this style. The more specific characteristics of churches in this style are: cruciform plan with apse and apsidal chapels, the tower rising from the intersection of nave and transept; semicylindrical vaulting; the doorways, deeply recessed, with highly decorated moldings; the windows small, round-headed, placed high in the wall, and opening with a wide splay inside; piers massive, generally cylindrical or octagonal, and sometimes enriched with shafts; capitals cushion-shaped, some-

times plain, more frequently enriched; buttresses broad, with but small projection; walls frequently decorated by bands of arcades with single or interlacing arches. In course of time the arches began to assume the pointed character; the walls, etc., to be less massive; short pyramidal spires crown the towers; and altogether the style assumes a more delicate and refined character, passing gradually into the Early English. Besides ecclesiastical buildings, the Normans reared many castellated structures, the best remaining specimen of which is the Keep of the Tower of London. The Norman architects were not distinguished for science in construction. The walls of their buildings were of great thickness, and the piers supporting their arches were usually of immense girth, yet notwithstanding this massiveness their works frequently gave way. The Abbaye aux Hommes and the Abbaye aux Dames at Caen, Normandy, afford excellent examples of this style; as also parts of the cathedrals of Durham, Peterborough, Norwich and Canterbury, as well as many smaller churches.

Norman Conquest, in English history, the successful attempt made by William of Normandy in 1066 to secure the English crown from his rival Harold, son of Earl Godwin. See *England* (*History*).

Normandy (nōr'man-di), an ancient province in the north of France, now divided into the departments of Seine-Inférieure, Eure, Orne, Calvados and Manche. On the decline of the Roman Empire it was seized by the Franks, and afterwards, in the tenth century, wrested from them by the Normans or Northmen, from whom it received its name. (See *Northmen.*) Charles the Simple gave his sanction to the conquest made by the Normans, and Rollo, their chief, received the title of Duke of Normandy. William the Bastard, sixth in succession from Rollo, having become king of England in 1066, Normandy became annexed thereto. On the death of William it was separated from England and ruled by his son Robert, and was afterwards ruled by the kings of England until Philip Augustus wrested it from John and united it to France in 1203. Although several times invaded by the English it was finally recovered by the French in 1450. Normandy is one of the richest and most fertile parts of France.

Norman French, a dialect of old French which became the Anglo-Norman of England. It was the language of legal procedure in England till the time of Edward III, and is still used in several formal proceedings of state.

Normans (literally 'north-men'), the descendants of the Northmen who established themselves in Northern France, hence called Normandy. Besides the important place occupied in history by the Normans in Normandy and England, bands of Normans established themselves in S. Italy and Sicily, and Norman princes ruled there from the middle of the eleventh till the end of the twelfth century. See *Normandy* and *Northmen*, also *Guiscard.*

Normanton (nōr'man-tun). a township in the West Riding of Yorkshire, on the Calder, giving name to a parliamentary division of Yorkshire. Pop. 15,033.

Norns (nōrnz), in Scandinavian mythology, the three Fates, representing the *past*, the *present* and the *future*, whose decrees were irrevocable. They were represented as three young women, named respectively Urd, Verdandi and Skuld.

Norris (nor'is), EDWIN, an eminent English linguist, and one of the founders of Assyriology; born in 1795; die' in 1872. For more than twenty-five years he was secretary to the Asiatic Society, and became a great authority on cuneiform writing. His great work is his *Assyrian Dictionary* (1868-72), which marks an epoch in cuneiform studies. The Celtic dialects also received a share of his attention.

Norris, FRANK, novelist, born at Chicago in 1870; died in 1902. He studied art in Paris and literature in the United States, and became a newspaper correspondent in South Africa and Cuba. His first novel, *Iberville* (1891) was a tale of old California. He first attracted attention by *McTeague* (1899) and *Lady Letty* (1900), but is chiefly known by his projected and partly written epic of the wheat: in three stories, two of which were written, *The Octopus*, detailing the troubles of the wheat growers with the railroad monopoly, and *The Pit*, describing the struggles on the wheat exchange in Chicago. *The Wave* (unwritten) was to deal with the story of the wheat after reaching a famine-stricken community in Europe.

Norris, WILLIAM EDWARD, an English novelist, born in 1847, son of Sir William Norris, chief justice of Ceylon. He studied law, but never practiced, devoting himself instead to literature. He wrote numerous novels, among them *My Friend Jim*, *The Rogue*, *The Dancer in Yellow*, *The Fight for the Crown*, etc.

NORTH AMERICA

Scale of Miles
0 200 400 600 800 1000

Important towns are shown In heavy face type

A 120° B 110 Longitude C West 100° from D Greenwich 90° E 80° F

Norristown (nor'is-toun), a city of Pennsylvania, capital of Montgomery Co., on the Schuylkill, 16 miles N. W. of Philadelphia. It is an important manufacturing city, having large iron and steel works, cotton, woolen, carpet and flour mills, and various other industries. Here is a State hospital for the insane, and near by are several charitable institutions. Pop. 27,875.

Norrköping (nor-cheup'ing), a town of Sweden, at the mouth of the Motala Elf in the Bravik, a gulf of the Baltic. The Motala Elf flows through the town, making several falls within it, and is crossed by several bridges. It has manufactures of woolens, cottons, etc., and has sugar refineries and shipbuilding yards. Pop. 41,008.

Norse (nōrs), the language of Scandinavia. *Old Norse* is represented by the classical Icelandic, and still with wonderful purity by modern Icelandic. The literature includes the early literature of the people of Norway, Sweden and Iceland.

Norte (nor'tā), Rio Grande del, a river of Mexico, rising in the Rocky Mountains and emptying itself into the Gulf of Mexico. Its mouth is 1200 feet wide, but is barred so as to afford entrance only to boats. Length about 2000 miles.

North, one of the cardinal points, being that point of the horizon or of the heavens which is exactly in the direction of the North Pole. See *Pole.*

North, Christopher. See *Wilson, John.*

North, Frederick, Lord, Earl of Guildford, the eldest son of Francis, second earl of Guildford, born in 1732; died in 1792. He belongs to English history as chief of the administration during the American war of Independence. Obtaining a seat in the House of Commons he was, in 1759, appointed a commissioner of the treasury, but resigned in 1765, when he joined the opposition to the Rockingham ministry. He came into office again with the Grafton ministry, 1766; in 1767 became chancellor of the exchequer; and in 1770 succeeded the Duke of Grafton as minister, when his retention of the tea-duty, imposed upon the American colonists, led to the rising in America, and to the declaration of independence, July 4, 1776. Lord North resigned March 20, 1782. He became Earl of Guildford by the death of his father in 1790.

North Adams, a city of Berkshire County, Massachusetts, on the Hoosac River, near the west end of the great Hoosac Tunnel, 36 miles E. of Albany. It is surrounded by beautiful mountain scenery, is the seat of a State normal school, and has extensive cotton, fruit and woolen mills, also boot and shoe, paper-box and other industries. Pop. 22,019.

Northallerton (nōrth'al-er-tun), a town of England, Yorkshire, in the North Riding, 32 miles N. N. E. of York. The inhabitants are chiefly engaged in agriculture, and some tanning and currying are carried on. Pop. 7745.

North America, the northern half of the western continent, or New World. Under *Ameriea* a general description of North America has been given, more especially as compared and contrasted with South America, but some additional information may be appended.

Physical Features.—The mainland of North America, in the widest sense of the name, is united to South America by the Isthmus of Panama, and extends from lat. 7° N. to lat. 72 N. In a narrower sense, and excluding the southern portion often spoken of as Central America, it extends only from lat. 15° N. To it on the north belongs an extensive archipelago of arctic islands, to the northeast of which lies Greenland, the latter generally regarded as belonging to America. The figure of North America is very irregular, and in that respect it resembles Europe. On the north is the great indentation of Hudson Bay, almost an inland sea, connected with the Atlantic by Hudson Strait. On the east are the Gulf of St. Lawrence, with the island of Newfoundland and the peninsula of Nova Scotia at its entrance; and the Gulf of Mexico, having on one side of its entrance the peninsula of Florida, on the other that of Yucatan. From the entrance of the gulf stretch eastward Cuba and others of the West India Islands. The chief features of the Pacific coast are the Gulf of California and peninsula of Lower California—further north Vancouver Island and the chain of other islands lining the coast. The continent terminates in a peninsular extension forming Alaska Territory, separated from Asia by Behring's Sea and Strait, the latter about 50 miles wide. The area of North America (excluding Greenland but including the West Indies) is about 8,150,000 sq. miles, or considerably more than double that of Europe. As regards its surface and physical features generally it presents certain points of similarity with Europe—numerous large rivers, elevated mountain chains, and large plains suited for the growth of cereals and other crops;

but most of its physical peculiarities are on a scale of greater magnitude than those of Europe. Thus its greatest mountain system, that of the Cordilleras (of which the Rocky Mountains strictly speaking form only a part), extends along the entire western side of the continent for a distance of at least 5000 miles, and rises to the height of 20,000 feet. The great plains which stretch on the east of these mountains from the Arctic Ocean to the Gulf of Mexico are also of far greater magnitude than those of Europe, contain the largest bodies of fresh water in the world, and are intersected by a series of rivers, one of which, the Mississippi-Missouri, is the longest of all rivers (length 4200 miles). The basin of the Mississippi-Missouri is bounded on the east by the Appalachian chain, one of much less comparative magnitude, but forming an important feature of the surface conformation of the continent. In its great navigable rivers and lakes North America possesses an immense system of inland navigation. As the great watershed of North America is formed by the Rocky Mountains, all the chief rivers, with the exception of the St. Lawrence, have their sources on its slopes or plateaus, whence they flow to the Gulf of Mexico, the Pacific, the Arctic Ocean, or Hudson Bay. At more than one point in the system the water-parting is formed by a lake or marsh sending a stream on one side to the Pacific and on the other side to the Atlantic. The Nelson, Mackenzie and Yukon are the chief rivers which flow into the Arctic Ocean, the last named having only recently been recognized as one of the great rivers of the world. The St. Lawrence is the largest of those which flow directly to the Atlantic. The lakes drained by the St. Lawrence, namely, Superior, Michigan, Huron, Erie, and Ontario, together cover an area of 97,000 square miles (or more than that of Great Britain). The largest, Lake Superior, has an area equal to that of Ireland. Other large lakes further to the north include Winnipeg, Athabasca, Great Bear Lake and Great Slave Lake. The principal islands on the east are those of Newfoundland, Anticosti, Prince Edward and Cape Breton, all at the mouth of the St. Lawrence; the Bahama Islands, Cuba, Hayti, Porto Rico and Jamaica. On the northwest coast the principal islands are Vancouver's Island, Queen Charlotte's Island and King George III's Archipelago. The only others of any importance are the Aleutian Islands, stretching west from the peninsula of Alaska; the islands in the Arctic Ocean are almost inaccessible.

Climate and Productions.—The climate admits of a vast variety of vegetable products being grown, and though in the far north extremely rigorous, as a whole it is healthy and well suited to the peoples of Teutonic origin who now form so large a portion of the inhabitants. As regards minerals and other products North America is exceptionally favored, possessing abundance of all those that are most valuable—gold, silver, copper, iron, lead and coal. Immense quantities of gold and silver have been produced. The coal fields are of prodigious extent, the Appalachian stretching without interruption 720 miles. The Pittsburgh seam is 225 miles in length and 100 in breadth. There are vast quantities in the Northern Central and some of the Western States, while Alaska is also very rich in coal. Iron is worked in many parts, as are also copper and lead. Salt is likewise widely diffused. The forests are of vast extent, and include a great variety of the most useful timber trees, as pines, oak, ash, hickory, beech, birch, poplar, sycamore, chestnut, walnut, maple, cedar, etc. Maize or indian corn is the only important farinaceous plant peculiar to the New World, but almost all fruits and grains known to Europe are cultivated to perfection in North America, to which Europe is now indebted for immense quantities of agricultural and dairy produce, as well as provisions of various kinds, and raw materials such as cotton, etc.

Divisions.—The political divisions of North America are the United States, the Dominion of Canada, Newfoundland, Mexico, and the Central American States. Canada occupies almost the whole of the continent north of the great lakes and lat. 49° N. The territory of the United States extends from the British possessions to Mexico and the Gulf of Mexico, and from the Atlantic to the Pacific Ocean. Alaska Territory, belonging to the United States, occupies the northwest corner of the continent. The republican form of government prevails everywhere except in the British dominions. The areas and population were as follows in 1900:

	Area, sq. miles	Pop.
British America (including Newfoundland)	3,530,630	5,371,315
United States (including Alaska)	3,602,990	93,402,151
Mexico	751,494	13,603,819
Central American States	173,878	2,844,897
West Indies	92,270	5,180,042
	8,151,262	202,404,224

People.—The population (in 1910, 91,972,266 in the United States) consists

most largely of people of British or at least Teutonic origin, though the French and Spanish elements are also well represented. In the United States people of negro race numbered in 1910, 9,828,296. The aboriginal tribes of North America, known as Indians, are of a hardy and warlike character, but they are gradually dying out before the march of the white man. They have all so strong a resemblance to each other in physical formation and in intellectual character as to leave no doubt of their belonging to one family. (See *Indians, American.*) In Mexico a people of the same race, the Aztecs, had made considerable progress in civilization before the arrival of the Europeans. In the extreme north we find the Eskimos, who differ considerably from the Indians, but are often classed along with them as people of Mongoloid origin.

Discovery.—America is now believed to have been visited by Norsemen in the tenth and eleventh centuries; but the modern discovery is due to Columbus, who reached one of the West Indies in 1492. Following his lead the first to reach the mainland was John Cabot, who, with his son Sebastian, sailed from Bristol in 1497, and on June 24 came in sight of Labrador. In 1512 Florida was discovered by Ponce de Leon. Giovanni Verazzano, a Florentine sent out by Francis I of France in 1524, surveyed upwards of 2000 miles of coast, and discovered that portion now known as North Carolina. Ten years afterwards, Jacques Cartier, a seaman of St. Malo, sailed from that port for Newfoundland, the north coast of which he surveyed and minutely described. He subsequently made several voyages, and was the first European to enter the St. Lawrence, ascending it as high as the site of Montreal. The Spaniards had previously conquered Mexico, and a desire to extend their dominion (1519-21) in a northerly direction led to further discoveries in North America. The coast of California was discovered by Ximenes, and in 1539 the Gulf of California was first entered by Francisco de Ulloa. In 1578 Drake visited the northwest coast. These discoveries were followed by those of Davis in 1585-87, Hudson in 1610, Bylot and Baffin in 1615-16, all in the northeastern seas. By this time settlements had been made by the French, English and Dutch. The French occupied Nova Scotia and Canada, and later Louisiana. Captain Behring, who was sent out in 1725 by the Empress Catharine, set at rest the disputed point whether Asia and America were separate continents. Other names associated with American maritime discovery are Cook, Meares, Vancouver, Kotzebue, and more recently, Ross, Parry, Franklin, Beechey, McClintock; Kenzie, Back, Rae, Simpson and Schwatka, and polar discoverers Kane, Hall, Hayes, Greely, Peary, etc. (See also *North Polar Expeditions.*) The Canadian authorities have in recent years done much in the way of survey and exploring the less-known portions of the Dominion, and Alaska has been made known by the efforts of expeditions from the United States. For general history see *Canada, United States, Mexico,* etc.

Northampton (nōr th'amp-tun), a borough of England, capital of the county of same name, on the left bank of the Nene, which is connected with the Grand Junction Canal. Northampton has several noteworthy churches, especially one of the three remarkable round churches of the country —a Norman structure of great interest; and the other more important buildings are the town-hall, the shire or county hall, the corn exchange, cattle market, infirmary, etc. The staple manufacture is boots and shoes for home and export trade. The currying of leather is also carried on on a large scale. There are also iron and brass foundries, breweries, corn mills, etc., and iron ore, found near by, is smelted. Pop. 92,041. The county, in south-central England, has an area of 998 sq. miles. It is pleasantly diversified by low hills, beautiful vales, extensive woodlands copiously watered by numerous rivers and streams, the chief of them being the Nene, which flows through the county to Peterborough and the Wash. The soil is mostly rich and fertile, consisting principally of various kinds of loam. The principal grain crops are wheat, barley, and oats. The rearing of sheep and cattle is a principal object with the Northamptonshire farmers. Iron ore of excellent quality is found in vast beds, and of late years this has developed into an important industry. Pop. 348,552.

Northampton, a city, capital of Hampshire Co., Massachusetts, on the Connecticut River, 17 miles N. by W. of Springfield, beautifully situated in a fertile intervale among hills, 2 miles from Mount Holyoke and about 5 miles from Mount Tom. It is a frequented summer resort. It is the seat of Smith College, one of the leading woman's colleges; the State lunatic asylum, and institution for deaf mutes, the Forbes Library, etc. Its industries include silk thread, satins, cutlery, hardware, silverplated ware, etc. At Flor-

ence and Leeds, both within the city limits, are large mills and factories. Pop. 19,431.

Northampton, a borough in Northampton Co., Pennsylvania, 13 miles W. by N. of Easton. It manufactures cement, flour, malt liquors, etc. Pop. 8729.

North Andover, a town (township) in Essex County, Massachusetts, with a village of the same name, about 28 miles N. of Boston, where woolen goods, machinery, etc., are produced. Pop. of town 5529.

North Attleborough (at'l-bur-ō), a town (township) of Bristol County, Massachusetts, 14 miles N. by E. of Providence, R. I. It has manufactures of jewelry and jewelers' supplies, etc. Pop. 9562.

North Bay, a town on Lake Nipissing, Ontario. It is in a mining region. Pop. (1911) 7737.

North Borneo (bōr'ne-ō), the territory occupying the northern part of the island of Borneo (which see) under the jurisdiction of the British North Borneo Company, having been ceded by the Sultans of Sulu and Brunei in 1877-78 and the company having received a royal charter in 1881. The territory embraces 31,000 square miles, and has a pop. of 150,000. The interior is very mountainous, one summit, Mount Kini Balu, rising to a height of 13,700 feet. A large portion of the surface is forest and jungle. There is a coast line of 900 miles, and several splendid harbors. Coal and gold have been found, and the territory is believed to be very rich in minerals. The exports comprise wax, edible birds'-nests, cocoanuts, gutta-percha, sago, tobacco, rattans, india rubber and timber. With Brunei and Sarawak it was made a British protectorate in 1888.

North Braddock, a borough of Allegheny Co., Pennsylvania, forming part of Bradford Township. Pop. 11,824.

Northbridge, a town of Worcester Co., Massachusetts, on Blackstone River, 11 miles S. E. of Wooster. There are manufactures of shirtings, cotton prints, and woolens. Pop. 8807.

Northbrook (nōrth'brök), THOMAS GEORGE BARING, EARL OF, an English statesman, son of the first Baron Northbrook, born in 1826. He entered parliament in the Liberal interest in 1857; was a lord of the admiralty from 1857 to 1858, under-secretary of state for India from June, 1859, to January, 1861, for war from the latter date to June, 1866, and again on the accession of Mr. Gladstone from December, 1868, to February, 1872, when he was appointed viceroy of India. This office he resigned in 1876, and was created Earl of Northbrook. On the formation of the Gladstone cabinet, in 1880, Lord Northbrook was appointed first lord of the admiralty. In 1884 he was placed at the head of the British commission governing Egypt. He died in 1904.

North Cape, a celebrated promontory, forming the most northern point of Europe, and situated on the north of the island of Magerōe, which is separated from the mainland of Sweden by a narrow channel.

North Carolina, one of the original United States, on the Atlantic coast, is bounded N. by Virginia, E. and S. E. by the Atlantic, S. by South Carolina and Georgia, and W. by Tennessee; area, 52,426 sq. miles. The surface is very varied. For nearly 100 miles inland from the coast it is level, marshy and swampy, the soil sandy but very fertile; the middle section has a varied surface and fine soil; farther inland hilly land begins, rising until it reaches the mountains of the western border. Some of the peaks here reach an elevation from 5000 to 6000 feet. Here there is good grazing land, with much hard timber, and stock-raising is carried on. In the east the river bottoms and reclaimed swamp lands yield abundantly, rice, cotton, corn, apples, peaches, pears, honey and beeswax being produced. Cranberries are extensively raised, and the Catawba and Scuppernong grapes are natives of the soil. The middle section is adapted to the culture of the cereals, tobacco and cotton, and sweet potatoes are a leading staple. In the production of peanuts North Carolina stands third among the states. The pine section of the coastal region is largely uncultivated, but there is a considerable production of timber, tar, and turpentine. The fisheries are large and valuable. The state is rich in useful minerals, coal and iron being very abundant. The coal is largely bituminous and occurs in two large fields, while magnetic and hematite iron ores occur over a wide region, the Cranberry mine, in Mitchell County, yielding the purest magnetic ore yet found in the United States. Gold is mined to a considerable extent, and there is a branch of the United States mint at Charlotte. Silver, lead and zinc are found, and copper ores cover a wide field. Mica is mined and corundum and many other minerals occur, including some precious stones. Cotton goods form the leading manu-

NORTH CAROLINA

Scale of Miles
0 10 20 40 60 80

WESTERN PART
OF
NORTH CAROLINA
Same Scale as Main Map

82° A 81° B 80° C 79° D 78° E 77° F 76° G

NORTH DAKOTA

Scale of Miles 0 10 20 30 40 50

104° A 103° B 102° C 101° D 100° E 99° F 98° G 97° H

1 2 3 4 49 48 47 46

DOMINION OF CANADA

MONTANA

SOUTH DAKOTA

Turtle Mts.

Missouri R.

Red R.

Souris R.

Mouse R.

Heart R.

Cannon Ball R.

Little Missouri R.

Grand R.

Pembina

Walhalla

Neche

Bathgate

Cavalier

Hamilton

Langdon

Mountain

Hensel

St. Thomas

Grafton

Park River

Edinburg

Hoople

Crystal

Gardar

Auburn

Milton

Osnabrock

Loma

Dresden

Olga

Leyden

Backoo

Carlisle

Joliette

Bowesmont

Rolla

Dunseith

Bottineau

Omemee

Perth

Egeland

Bisbee

Calvin

Island Lake

Grassland

Cecil

Zion

Juniata

Pleasant Lake

Maza

Cando

Starkweather

Webster

Brocket

Devils Lake

Pelto

Crary

Bartlett

Lakota

McCanna

Honeyford

Arvilla

Mekinock

Gilby

Manvel

Walshville

Minto

Grand Forks

Larimore

Emerado

Northwood

Thompson

Reynolds

Mayville

Portland

Sherbrooke

Clifford

Hope

Hillsboro

Caledonia

Blanchard

Kelso

Grandin

Galesburg

Hunter

Page

Colgate

Wilna

Hannaford

Cooperstown

Binford

Jessie

Bordulac

Pleasantview

Helena

Kensal

Courtenay

Leal

Wimbleton

Gray

Esler

Carrington

Bowdon

Hurdsfield

Denhoff

McClusky

Turtle Lake

Goodrich

Chaseley

Heaton

Sykeston

Harvey

Twist

Sheyenne

Kiner

Tiffany

Deehr

McVille

McHenry

New Rockford

Barrabee

Barlow

Haven

Morris

Fergus

Lakewood

Harlow

Tower City

Sanborn

Jamestown

Valley City

Lanona

Buffalo

Wheatland

Everest

Agricultural College

Fargo

Alice

Chaffee

Davenport

Wildrose

Hastings

Flugal

Kathryn

Nome

Litchville

Montpelier

Sharlow

Windsor

Cleveland

Spiritwood

Pyasilanti

Medina

Dawson

Driscoll

McKenzie

Sibleybutte

Frances

Cromwell

Arnold

Youngtown

Harmon

Hebron

Glen Ullin

Blue Grass

New Salem

Mandan

Judson

Sims

BISMARCK

Menoken

Sterling

Steele

Tappen

Crystal Springs

Braddock

Napoleon

Gackle

Streeter

Armstrong

Glencoe

Stewartsdale

St. Anthony

Parkin

Ft. Rice

Livona

Hazelton

Gayton

Carson

Dogtooth

Hampton

Ball

Linton

Wishek

Strasburg

Exeter

Hague

Venturia

Zeeland

Lowell

Ellendale

Silverleaf

Brampton

Havana

Geneseo

Fairmount

Hankinson

Wahpeton

Lisbon

Enderlin

Leonard

Kindred

Barrie

Walcott

Colfax

Aberdeen

Dwight

Moorehead

Wyndmere

Milnor

Gwinner

Harlem

Verona

Glover

Lamoure

Dickey

Grand Rapids

Berlin

Edgeley

Oakes

Nicholson

Cogswell

Cayuga

Ransom

Lidgerwood

Mantador

Great Bend

Fullerton

Clement

Guelph

Monango

Merricourt

Kulm

Wirch

Coldwater

Ashley

Hellwig

Ft. Yates

Winona

Westfield

Glanavon

Hull

Jewell

Oscar

Max

Mowrer

Garrison

Malcolm

Herr

Darling

Coalharbor

Underwood

Maunhaven

Krem

Stanton

Conkling

Washburn

Hazen

Deapolis

Ellis

Sanger

Painted Woods

Cordas

Tucca

Butte

Halliday

Oakdale

Beicegel

Fayette

Gorham

Mikkelson

Rockspring

Broncho

Marshall

Camels Hump

Sentinel Butte

Medora

Belfield

Zenith

Lehigh

Gladstone

Richardton

Taylor

Antelope

Dickinson

Red Butte

Yule

New England

Sandercek

Beaver

Paoli

Gascoyne

Haley

Pommes Blanche Hills

Whetstone Buttes

Cedar Cr.

Bucyrus

Hettinger

Scranton

Reeder

Bowman

Rhame

Marmarth

Montrose

Harrington

Grimm

Cannon Ball

Janesburg

Wade

Howe

Elbowoods

Ft. Berthold

Expansion

Halliday

Douglas

Ruso

Dogden Butte

Voltaire

Ryder

Bye

Goodall

Schafer

Cartwright

Ft. Buford

Trenton

Bagnal

Williston

Avoca

Banks

Nesson

Grinnell

Epworth

Chilcot

Hofflund

Ray

Wheelock

Marmon

Polege

Angie

Stordahl

McGregor

Powers Lake

Kenmare

Bowbells

Columbus

Crosby

Kermit

Portal

Ambrose

Plaza

Grelland

Berthold

Deslacs

Minot

Surrey

Sawyer

Velva

Villard

Elling

Esmond

Balfour

Drake

Maddock

Flora

Eden

Martin

Viking

Anamoose

Dogden Butte

Fessenden

Cathay

Lincoln

Maurfrel

Sheyenne

Tolna

Petersburg

Michigan

Dazey

Ashtabula

Minnelake

Erie

Arthur

Armenia

Ayr

Matteson

Absaraka

Casselton

Harwood

Mapleton

Christine

Abercrombie

Dwight

Moorehead

Wyndmere

Milnor

Gwinner

Harlem

Verona

Glover

Lamoure

Dickey

Grand Rapids

Berlin

Edgeley

Oakes

Nicholson

Cogswell

Cayuga

Ransom

Lidgerwood

Mantador

Great Bend

Fullerton

Clement

Guelph

Monango

Merricourt

Kulm

Wirch

Coldwater

Ashley

Hellwig

Ft. Yates

Winona

Westfield

Glanavon

Hull

Jewell

Oscar

Max

Mowrer

Garrison

Malcolm

Herr

Darling

Coalharbor

Underwood

Maunhaven

Krem

Stanton

Conkling

Washburn

Hazen

Deapolis

Ellis

Sanger

Painted Woods

Cordas

Tucca

Butte

Halliday

Oakdale

Beicegel

Fayette

Gorham

Mikkelson

Rockspring

Broncho

Marshall

Camels Hump

Sentinel Butte

Medora

Belfield

Zenith

Lehigh

Gladstone

Richardton

Taylor

Antelope

Dickinson

Red Butte

Yule

New England

Sandercek

Beaver

Paoli

Gascoyne

Haley

Pommes Blanche Hills

Whetstone Buttes

Cedar Cr.

Bucyrus

Hettinger

Scranton

Reeder

Bowman

Rhame

Marmarth

Montrose

Harrington

Grimm

Cannon Ball

Janesburg

Wade

Howe

Elbowoods

Ft. Berthold

Expansion

Halliday

Douglas

Ruso

Dogden Butte

Voltaire

Ryder

Bye

Goodall

Schafer

Cartwright

Ft. Buford

Trenton

Bagnal

Williston

Avoca

Banks

Nesson

Grinnell

Epworth

Chilcot

Hofflund

Ray

Wheelock

Marmon

Polege

Angie

Stordahl

McGregor

Powers Lake

Kenmare

Bowbells

Columbus

Crosby

Kermit

Portal

Ambrose

Plaza

Grelland

Berthold

Deslacs

Minot

Surrey

Sawyer

Velva

Villard

Elling

Esmond

Balfour

Drake

Maddock

Flora

Eden

Martin

Viking

Anamoose

Dogden Butte

Fessenden

Cathay

Lincoln

Maurfrel

Sheyenne

Tolna

Petersburg

Michigan

Dazey

Ashtabula

Minnelake

Erie

Arthur

Armenia

Ayr

Matteson

Absaraka

Casselton

Harwood

Mapleton

Christine

Abercrombie

Dwight

Moorehead

Wyndmere

Milnor

Gwinner

Harlem

Verona

Glover

Lamoure

Dickey

Grand Rapids

Berlin

Edgeley

Oakes

Nicholson

Cogswell

Cayuga

Ransom

Lidgerwood

Mantador

Great Bend

Fullerton

Clement

Guelph

Monango

Merricourt

Kulm

Wirch

Coldwater

Ashley

Hellwig

Ft. Yates

Winona

Westfield

Glanavon

Hull

Jewell

Oscar

Max

Mowrer

Garrison

Malcolm

Herr

Darling

Coalharbor

Underwood

Maunhaven

Krem

Stanton

Conkling

Washburn

Hazen

Deapolis

Ellis

Sanger

Painted Woods

Cordas

Tucca

Butte

Halliday

Oakdale

Beicegel

Fayette

Gorham

Mikkelson

Rockspring

Broncho

Marshall

Camels Hump

Sentinel Butte

Medora

Belfield

Zenith

Lehigh

Gladstone

Richardton

Taylor

Antelope

Dickinson

Red Butte

Yule

New England

Sandercek

Beaver

Paoli

Gascoyne

Haley

Pommes Blanche Hills

Whetstone Buttes

Cedar Cr.

Bucyrus

Hettinger

Scranton

Reeder

Bowman

Rhame

Marmarth

Montrose

Harrington

Grimm

Cannon Ball

Janesburg

Wade

Howe

Elbowoods

Ft. Berthold

Expansion

Halliday

Douglas

Ruso

Dogden Butte

Voltaire

Ryder

Bye

Goodall

Schafer

Cartwright

Ft. Buford

Trenton

Bagnal

Williston

Avoca

Banks

Nesson

Grinnell

Epworth

Chilcot

Hofflund

Ray

Wheelock

Marmon

Polege

Angie

Stordahl

McGregor

Powers Lake

Kenmare

Bowbells

Columbus

Crosby

Kermit

Portal

Ambrose

Plaza

Grelland

Berthold

Deslacs

Minot

Surrey

Sawyer

Velva

Villard

Elling

Esmond

Balfour

Drake

Maddock

Flora

Eden

Martin

Viking

Anamoose

Dogden Butte

Fessenden

Cathay

Lincoln

Maurfrel

Sheyenne

Tolna

Petersburg

Michigan

Dazey

Ashtabula

Minnelake

Erie

Arthur

Armenia

Ayr

Matteson

Absaraka

Casselton

Harwood

Mapleton

Christine

Abercrombie

Dwight

Moorehead

Wyndmere

Milnor

Gwinner

Harlem

Verona

Glover

Lamoure

Dickey

Grand Rapids

Berlin

Edgeley

Oakes

Nicholson

Cogswell

Cayuga

Ransom

Lidgerwood

Mantador

Great Bend

Fullerton

Clement

Guelph

Monango

Merricourt

Kulm

Wirch

Coldwater

Ashley

Hellwig

Ft. Yates

Winona

Westfield

Glanavon

Hull

Jewell

FORT BERTHOLD INDIAN RESERVATION

STANDING ROCK INDIAN RESERVATION

Missouri

Cannon Ball

Heart

Big Heart

Little Heart

Knife

Square Butte

Turtle Lake

Lake Darling

Lake Sakakawea

Lake Audubon

Lake Williams

Lake Ilo

Lake Tschida

Lake Patterson

Lake Nettie

Lake Ashtabula

Devils Lake

Stump Lake

Sweetwater Lake

Dry Lake

Big Coulee

Plum Coulee

Bay Center

Rosenfeld

Roland

Morris

Elkwood

Hannah

Wales

Mona

Walhalla

Bathgate

Cavalier

Hamilton

Langdon

Mountain

Hensel

St. Thomas

Grafton

Park River

Edinburg

Hoople

Crystal

Gardar

Auburn

Milton

Osnabrock

Loma

Dresden

Olga

Leyden

Backoo

Carlisle

Joliette

Bowesmont

Rolla

Dunseith

Bottineau

Omemee

Perth

Egeland

Bisbee

Calvin

Island Lake

Grassland

Cecil

Zion

Juniata

Pleasant Lake

Maza

Cando

Starkweather

Webster

Brocket

Devils Lake

Pelto

Crary

Bartlett

Lakota

McCanna

Honeyford

Arvilla

Mekinock

Gilby

Manvel

Walshville

Minto

Grand Forks

Larimore

Emerado

Northwood

Thompson

Reynolds

Mayville

Portland

Sherbrooke

Clifford

Hope

Hillsboro

Caledonia

Blanchard

Kelso

Grandin

Galesburg

Hunter

Page

Colgate

Wilna

Hannaford

Cooperstown

Binford

Jessie

Bordulac

Pleasantview

Helena

Kensal

Courtenay

Leal

Wimbleton

Gray

Esler

Carrington

Bowdon

Hurdsfield

Denhoff

McClusky

Turtle Lake

Goodrich

Chaseley

Heaton

Sykeston

Harvey

Twist

Sheyenne

Kiner

Tiffany

Deehr

McVille

McHenry

New Rockford

Barrabee

Barlow

Haven

Morris

Fergus

Lakewood

Harlow

Tower City

Sanborn

Jamestown

Valley City

Lanona

Buffalo

Wheatland

Everest

Agricultural College

Fargo

Alice

Chaffee

Davenport

Wildrose

Hastings

Flugal

Kathryn

Nome

Litchville

Montpelier

Sharlow

Windsor

Cleveland

Spiritwood

Pyasilanti

Medina

Dawson

Driscoll

McKenzie

Sibleybutte

Frances

Cromwell

Arnold

Youngtown

Harmon

Hebron

Glen Ullin

Blue Grass

New Salem

Mandan

Judson

Sims

BISMARCK

Menoken

Sterling

Steele

Tappen

Crystal Springs

Braddock

Napoleon

Gackle

Streeter

Armstrong

Glencoe

Stewartsdale

St. Anthony

Parkin

Ft. Rice

Livona

Hazelton

Gayton

Carson

Dogtooth

Hampton

Ball

Linton

Wishek

Strasburg

Exeter

Hague

Venturia

Zeeland

Lowell

Ellendale

Silverleaf

Brampton

Havana

Geneseo

Fairmount

Hankinson

Wahpeton

Lisbon

Enderlin

Leonard

Kindred

Barrie

Walcott

Colfax

Aberdeen

Dwight

Moorehead

Wyndmere

Milnor

Gwinner

Harlem

Verona

Glover

Lamoure

Dickey

Grand Rapids

Berlin

Edgeley

Oakes

Nicholson

Cogswell

Cayuga

Ransom

Lidgerwood

Mantador

Great Bend

Fullerton

Clement

Guelph

Monango

Merricourt

Kulm

Wirch

Coldwater

Ashley

Hellwig

Ft. Yates

Winona

Westfield

Glanavon

Hull

Jewell

C. S. HAMMOND & CO., N.Y.

104° A 103° B 102° C Longitude 101° West D from 100° Greenwich E 99° F 98° G 97° H

facture, while woolens, naval stores, flour, carriages, boots and shoes, etc., are among the products. Large quantities of lumber, naval stores, cotton, tobacco, and other products are exported to coastwise and foreign ports. There are numerous rivers, including the Cape Fear, the Roanoke, the Neuse, the Tar, the Pamlico, and others, yielding several hundred miles of navigable waters. Raleigh is the capital, the other chief cities being Wilmington, Charlotte, Asheville, Greensboro, Winston, and Concord. North Carolina was one of the seceding Confederate States and was the last important battle-ground in the Civil war. Pop. 2,206,287.

Northcote (north'kōt), JAMES, artist, was born in Plymouth, England, in 1746. He studied art under Sir Joshua Reynolds. He became highly successful as a portrait painter, and won both wealth and reputation. Two of his best works were for the Shakespeare Gallery—the *Murder of the Two Princes in the Tower*, and *Hubert and Arthur*. He published *Memoirs of Sir Joshua Reynolds*, comprising anecdotes of his contemporaries (1813), and a Supplement (in 1815); and *Memoirs of Titian* (1830). He died in 1831.

Northcote, STAFFORD. See *Iddesleigh.*

North Dakota (da-kō'ta), one of the northwestern United States, bounded N. by Canada, S. by South Dakota, E. by Minnesota, and W. by Montana; area, 70,837 square miles; length, about 355 miles; width, about 200 miles. On its eastern border is the navigable Red River of the North, and the Missouri traverses the State from the W. to the S. E. through a region of high plains and plateaus. It is navigable for boats of three to six hundred tons burden. Its principal affluents are the Yellowstone, Little Missouri, Bigknife, Heart, and Cannon Ball rivers. There are other streams in the north flowing into Canada. The general elevation ranges from 800 feet on the E. to 2000-2800 on the W. and S. W.; the portion of the State E. of the Missouri being mostly rolling prairie; that W. being more broken. In the N. is a group of hills of moderate elevation known as Turtle Mountain. Between the basins of the Mouse and Red rivers is a limited area with no outlet to the sea for its waters, and containing a large salt lake, known as Devil's Lake, a picturesque sheet of water about 40 miles long. In the S. W. is a district of eroded dry hills, called the 'Bad Lands,' generally a good grazing region. The land on the Missouri slope has a black, sandy soil, with dry subsoil; that of the Red River valley is a vegetable deposit of unsurpassed richness. Minerals of importance are wanting, except lignitic coal, of which there are extensive deposits, mined to some extent. Salt springs and streams are numerous in parts of the Red River valley. The air is dry and invigorating and the climate very healthful, it being delightful in summer and autumn, but severe in winter, the mercury sometimes falling to 40° below zero. The absence of humidity enables this severe weather to be borne with comparatively little discomfort. Wheat is the leading agricultural product, and promises to be always the chief staple. The Red River valley is unsurpassed as a wheat-growing section, and Dakota wheat has a wide reputation for superiority. Wheat growing is conducted on a grand scale, there being single fields or farms of 20,000 or more acres. Oats come next in yield. In the western section stock-raising is an important industry, and much wool is produced. The manufactures are mainly adapted to local needs. The principal towns are Bismarck, the capital, Fargo and Grand Forks. The Territory of Dakota was organized in 1861, and divided into the States of North and South Dakota in 1889. Pop. 577,056.

Northeast Passage, a passage for ships along the northern coasts of Europe and Asia to the Pacific Ocean, formerly supposed likely to be of commercial value. The first to make the complete voyage by this passage was the Swedish explorer Nordenskiöld, after it had been from time to time attempted in vain for upwards of three centuries.

Northeast Territory, a territory of Canada on the east of Hudson Bay, and extending south to Quebec province. It forms part of the peninsula of Labrador, and is little known. It is intersected by Rupert's River, East Main River, Big River, Great and Little Whale River, etc., all flowing west to Hudson Bay, and contains numerous lakes. Furs are the only commodity as yet obtained from it. See *Canada.*

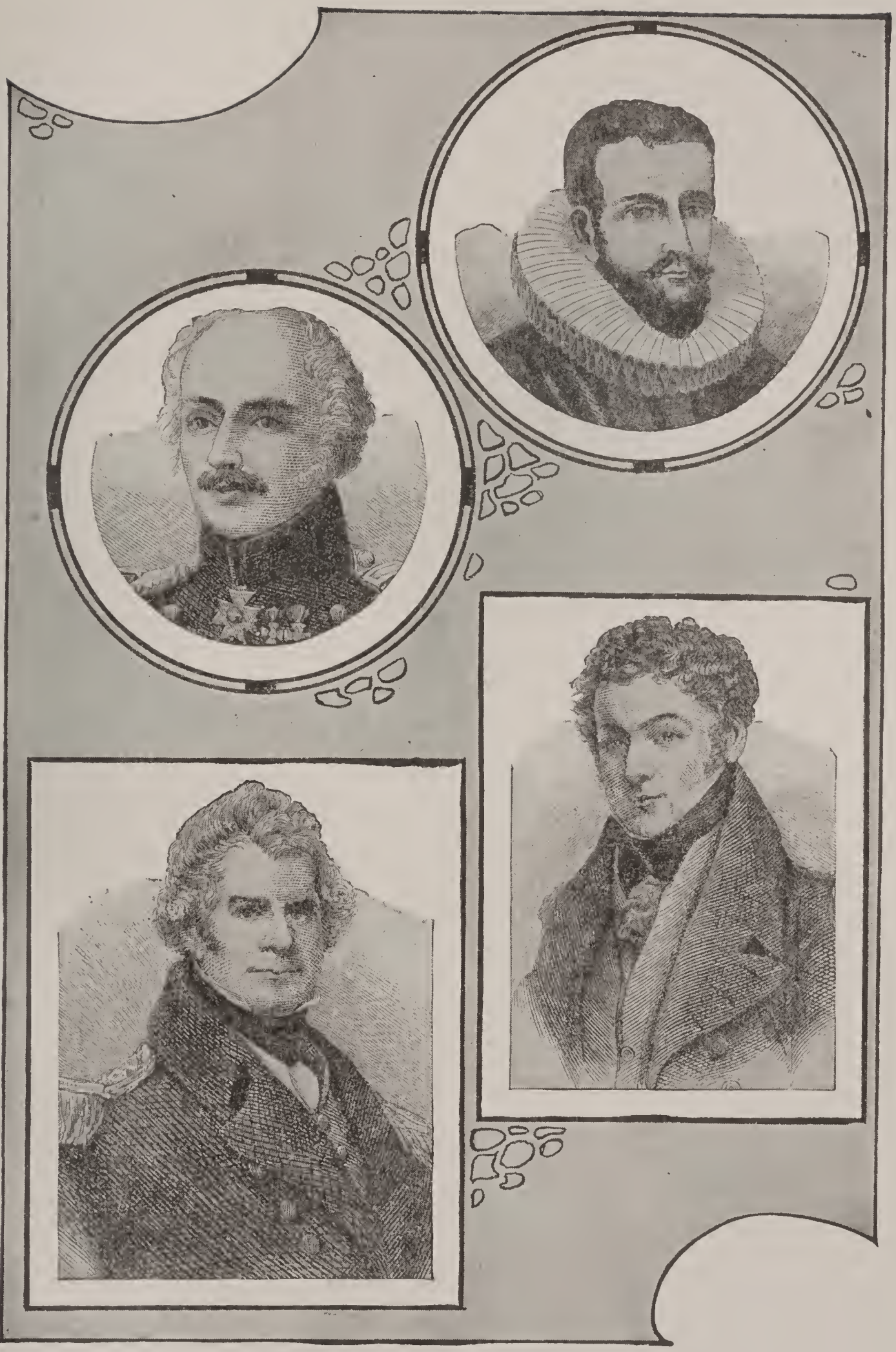
Northern-drift, in geology, a name formerly given to boulder-clay of the Pleistocene period, when its materials were supposed to have been brought by polar currents from the north.

Northern Lights. See *Aurora.*

Northern Mythology (mith'ol-ō-ji), the

mythology of the Scandinavian peoples inhabiting Denmark, Norway, Sweden and Iceland. According to the Scandinavian mythical cosmogony there were originally no heavens above nor earth below, but only a bottomless deep (*Ginungagap*), north of which was a world of mist (*Niflheim*), and south of which was the world of light or fire (*Muspelheim*). A warm wind blowing from the latter upon the ice of Niflheim melted it, and from the drops sprang Ymir, the ice giant. Ymir was fed by the cow Audhumbla, which arose in the same way. As she was one day licking blocks of ice, human hair grew out of them, and then an entire man, called Buri. His son was Bor, who had three sons, Odin, Vili and Ve, who became the rulers of heaven and earth. The children of Bor were good, those of Ymir wicked; and they were constantly at war with each other. The sons of Bor finally slew the ice giant, dragged his body into the deep, and from it created the world. Out of two trees Odin, Vili and Ve created a man, called Askur, and a woman, Embla. The earth was supported by a large ash, called Ygdrasil, whose branches extend over the world, while its top reaches above the heaven. The residence of the gods was Asgard, whence the bridge Bifröst led to the earth. The giants dwelt in Jötunheim or Utigard, and men in Midgard. As in Greek mythology there was an older and a newer dynasty of the gods. The ancient and modern systems seem to have their connecting point in Odin, as with Zeus in the Greek system. Aesir or Aser is the name for the new race of gods. They are Odin, or Woden, the god of gods, the *Alfadur* (All-father), who lives forever; from him and his wife Frigga are descended the other gods. Among their sons are Thor, god of thunder, the strongest of gods and mortals, whose hammer, Miölnir, crushes the hardest objects, and Baldur, the youthful and beautiful god of eloquence. Niord is the god of winds, of sailors, of commerce, and of riches; his son Frei is the ruler of the sun, and upon him depend rain and sunshine, plenty or dearth. Freya is the goddess of love. The mildest and most bountiful of the gods, she is a friend of sweet song, and loves to hear the prayers of mortals. Tyr, a son of Odin, the fearless god, who wounds by a look, is lofty as a fir, and brandishes the lightnings of battle. He is not properly the god of war, but rather of power and valor. His brother Braga is the god of wisdom and poetry. Braga's wife is Iduna, who preserves the apples of immortality, which she offers in vessels of gold to the heroes at their entrance into Valhalla. The Valkyrias or 'choosers of the slain' are awful and beautiful beings, neither daughters of heaven nor of hell. Mounted on swift horses, they conducted the heroes to Valhalla. Another striking figure is Loki, as beautiful as he is malignant. By the giantess Angerbode he had Hela, the goddess of the lower regions, the wolf Fenrir, and the terrible serpent of Midgard, Jormungandur, which surrounds the whole earth. Hela rules in Niflheim. All who die of sickness and old age, and not in war, descend to her dark mansion. Other mythical personages were the Norns or fates, and Heimdall, who keeps watch on the bridge Bifröst. The popular belief was all would perish in a final crash of doom.

Northmen, the inhabitants of ancient Scandinavia, or Norway, Sweden and Denmark, who in England were also called *Danes*. They were fierce and warlike tribes, who as early as the eighth century made piratical expeditions to all parts of the European seas, these piratical robbers being known among themselves as *vikings*. In 795 the Scandinavians established themselves in the Faröe Isles and in Orkney; towards the middle of the ninth century they founded the governments of Novgorod and of Kiev, in Russia; and after the discovery of Iceland certain powerful Norwegian families, taking refuge from the persecutions of Harold, king of Denmark, settled in that island (in 870). In the ninth century they made repeated incursions into France, and it became necessary to purchase their retreat with gold. In that country latterly bands of them settled permanently, and Charles the Simple was obliged (912) to cede to them the province afterwards called *Normandy*, and to give his daughter in marriage to Rollo, their chief. Rollo embraced the Christian religion and became the first Duke of Normandy. The course of events was somewhat similar in England. Egbert, in the beginning of the ninth century, had no sooner made some approaches towards a regular government than the Danes made their appearance. Under Alfred (871-901) they overran great parts of England, but were finally defeated, and those of them who remained in the country had to acknowledge his sway. But they returned, under his successors, in greater force, obtained possession of the northern and eastern part of the country, and in the beginning of the eleventh century three Scandinavian princes (Canute, Harold and Hardicanute) ruled successively over England. The Saxon line was then re-



FAMOUS EARLY ARCTIC ADVENTURERS

BARON WRANGEL
SIR JOHN ROSS
HENRY HUDSON
SIR EDWARD PARRY

stored; but in 1066 William, duke of Normandy, a descendant of Rollo, obtained the English throne, an event known as the Norman Conquest. According to the Saga narratives the Northmen were the first discoverers of America. The coasts of Spain, Italy, Greece and Asia Minor were ravaged by them, and in Byzantium the bodyguard of the emperors long consisted of Northmen known as Varangians, being recruited chiefly from those who had established themselves in Russia.

North Plainfield, a borough of Somerset Co., New Jersey, formerly in North Plainfield Township. Pop. 6117.

North Polar Expeditions, expeditions of discovery in the Arctic regions. In 1517 Sebastian Cabot was commissioned by Henry VIII to search for a northwest passage round America to India; and from that time onwards the discovery of such a passage became a favorite project with explorers. Frobisher, Davis, Hudson, Bylot and Baffin successively engaged in this enterprise. Then after a lapse of nearly two centuries the record of Arctic research was taken up by such men as Ross and Parry (1827), the latter making a high latitude that was not exceeded for 48 years. The next of note to follow was Sir John Franklin, who set sail in command of the *Erebus* and *Terror* in May, 1845, and by the month of July reached Whalefish Islands in Davis Strait. On the 26th of that month the ships were seen in lat. 74° 48′ N.; lon. 66° 13′ W., after which no further intelligence concerning them was received. It was not, however, till the beginning of 1847 that serious apprehensions were entertained regarding the expedition. The most strenuous efforts were then made by both the English and the Americans to obtain tidings of Franklin. Among the numerous expeditions sent out by sea and land in search of the missing navigator and his company were those of Richardson and Rae (by land, 1847), of Sir James Ross (1848-49), and various others. In 1850 MacClure set out by Bering Strait on a search expedition, and to him is due the honor of having ascertained the existence of the long-sought-for northwest passage. Other expeditions between 1850 and 1855 were: Collinson's, Rae's, Kennedy's, Maguire's, Belcher's, MacClintock's and Inglefield's. In 1853 Rae, proceeding to the east side of King William Sound, obtained the first tidings of the destruction of Franklin's ships. In 1855 Anderson, proceeding up the Great Fish River, also discovered relics of the *Erebus* and *Terror*. At length MacClintock (1857-59) set all doubts at rest regarding the fate of Sir John Franklin and his companions by establishing the fact that they had died in 1847. Relics and skeletons of the party were found by Schwatka in 1880. Dr. Kane, an American explorer, who set out for the same purpose, made some important observations during the progress of his Arctic exploration, 1853-55, and made the highest northing to that date. Then followed the American expeditions of Dr. Isaac Hayes in 1860 and 1869, and those of Captain Charles Hall in 1860 and 1864.

Similarly efforts were also made to discover a northeast passage to the Pacific Ocean. In 1553 Willoughby rounded North Cape; in 1556 Burrough reached the south point of Nova Zembla and Waigatch Island; in 1580 Pet and Jackman penetrated into the Sea of Kara; in 1594-96 Barents discovered Bear Island and Spitzbergen, and rounded the east point of Nova Zembla. Dashnef in 1648 discovered Bering Strait, which was rediscovered in 1728 by Bering, whose name it bears. A more correct idea of the configuration of the coast on either side of Bering Sea was first obtained by Cook in 1778; but with the exception of this, to the Russians is due nearly all the credit, until recently, of the explorations on the North Asiatic coasts. The northeast passage was at last accomplished by Prof. Nordenskiöld, of Stockholm, who in 1878 sailed eastward along the whole of the north coast of Europe and Asia, emerging through Bering Strait early in 1879.

The northern portion of the American continent, in the region of the Coppermine River, was first explored by Hearne in 1771. In 1789 Mackenzie discovered the great river called after him. The north coast eastwards to the Great Fish was explored by Franklin, Richardson, and Back in two expeditions by land, the first from 1819 to 1821, and the second from 1825 to 1826, while in 1834-35 Back in company with King proceeded down the Back or Great Fish River. Finally Lieutenant Schwatka headed an overland expedition in 1879-80 in search of the journals of the Franklin expedition. Nares, 1875, explored Greenland, returning in October, 1876. One of his sledge-parties reached 83° 20′ N. lat., the second highest latitude ever attained. Of later expeditions may be mentioned that of the unfortunate *Jeannette* (1879), sent out under the command of Lieutenant De Long, to explore the Arctic Sea through

LEADERS OF FAMOUS ARCTIC EXPEDITIONS

Captain George E. Tyso
Captain Charles F. Hall
Dr. Isaac H. Hayes
William Scoresby

Bering Strait, and ending in serious disaster; those of Mr. Leigh Smith in 1880 and 1881, in the latter of which he lost his vessel; and that of Sir C. Young for the relief of the former. An expedition sent by the United States under Greely (1881-84) reached 83° 24′ N. In 1888 South Greenland was crossed by Nansen, and Peary, in 1892, crossed North Greenland to 81° 37′. S. A. Andrée, in 1897, sought to reach the pole in a balloon, but perished in the effort. Nansen in 1895 attained the very high latitude of 86° 14′, and the Duke of Abruzzi, in 1900, 86° 33′. These were surpassed by Peary, of the United States Navy, in 1906, who reached the latitude of 87° 8′, less than 200 miles from the pole and the highest point that had been reached to that date. Peary set sail again in 1908 in the specially built ship Roosevelt, and in 1909 had the remarkably good fortune of reaching the pole, attaining the goal which had been ardently sought for so many years. Dr. Cook, an exploring adventurer, announced the same year that he had reached the pole in 1908, but his statement was disproved and its falsity finally acknowledged by himself, the honor of the achievement remaining with Peary.

North Pole. See *Pole.*

North Sea, or GERMAN OCEAN, a large branch of the Atlantic Ocean lying between Great Britain and the continent of Europe, having the former and the Orkney and Shetland Islands on the west; Denmark and part of Norway on the east; Strait of Dover, part of France, Belgium, Holland, and Germany on the south; and the Northern Ocean on the north. Extreme length, from the Strait of Dover to Unst, the most northern of the Shetland Isles, about 700 miles; greatest breadth, between Haddingtonshire, Scotland, and Denmark, about 420 miles; area, not less than 140,000 square miles. The North Sea is deepest on the Norwegian side, where the soundings give 190 fathoms; but its mean depth is no more than 31 fathoms. The bed of this sea is traversed by several enormous banks or elevations, of which the greatest is the Dogger Bank (which see). The shores of the sea are for the most part low, except in Scotland and Norway. They present numerous estuaries and other inlets, and are studded with numerous important towns, the sea being the highway for an immense maritime traffic. The fisheries, especially of herring, cod, ling, haddock, flat-fish, etc., are exceedingly valuable. The rise and fall of the tide is very great at certain places. The navigation, on account of sand-banks, winds, fogs, etc., is rather dangerous, but numerous lighthouses help to render it safer. There are many islands along the coasts of Holland, North Germany, Denmark, and Norway.

North Sea and Baltic Canal, a great ship canal constructed by Germany, from Brunsbüttel, at the mouth of the Elbe, to the the Eider, and thence along the course of that river to Rensborg, from which place it follows the same course as the present Eider Canal to where it joins the Baltic at Holtenau, near Kiel. The waterway is about 185 feet wide at the surface and 72 feet at the bottom, with a depth of 29½ feet, and is intended for the passage of men-of-war as well as merchant ships, serving thus a double purpose. Its length is 61 miles. The foundation stone of the new lock at Holtenau was laid by the Emperor William I in June, 1887. The total cost of the construction was 156,000,000 marks (nearly $40,000,000), towards which Prussia contributed fifty millions. The canal was opened in 1895 with much ceremony. It is now known as the Kaiser Wilhelm canal.

North Sea Canal (called in Holland the Amsterdam Canal), a ship canal that connects Amsterdam with the North Sea, running east and west across the narrow neck of land that unites North Holland to the

From DeLong's "Voyage of the Jeannette."

THE "JEANNETTE" CRUSHED AND SUNK BY THE ICE

After drifting frozen in an ice floe for twenty-two months the "Jeannette," Captain George W. DeLong, commander, was crushed and sunk by the ice on June 13, 1881. The ship had been frozen in the ice. Suddenly a lead opened alongside; the pack closed in again nipping the ship, and then, while the stern was held fast, raising the bow of the vessel, the pressure was renewed with tremendous force, the ship cracking all over. The spar-deck buckled up · the starboard side caved in. All the boat's provisions were quickly hauled away on the ice to some distance, and the crew watched their ship slip through the ice to the bottom before starting on what proved to be one of the most frightful and memorable marches of Arctic history.

rest of the kingdom, and of great commercial value. See *Amsterdam.*

North Shields. See *Shields.*

North-star, the north polar star, the star *a* of the constellation Ursa Minor. It is close to the true pole, never sets, and is therefore of great importance to navigators in the northern hemisphere.

North Star, ORDER OF, a Swedish order of knighthood, established in 1748 mainly as a recognition of scientific services.

North Sydney, a town of Cape Breton, Nova Scotia, 18 miles N. W. of Sydney. Has coal mining industries. Pop. 5418.

North Tarrytown, a village in West Chester County, New York, adjoining Tarrytown. It has manufactures of drills, silk, etc. Pop. 5421.

North Tonawanda (ton-a-wân'da), a city of Niagara Co., New York, on the Niagara River and Tonawanda Creek, opposite Tonawanda. It has a good harbor and a large trade in lumber, and manufactures lumber, iron bolts and nuts, boilers and engines, chemicals, radiators, etc. Pop. 11,955.

North Toronto, a suburb of Toronto, Ontario. Pop. (1911) 5362.

Northumberland (north'um-bėr-land), a northern maritime county of England, bounded south and southwest by the counties of Durham and Cumberland; east by the North Sea, and north and northwest by Scotland. Area, 2016 sq. miles. The highest hills, the Cheviots, on the northwest border, towards Scotland, are admirably suited for pasture lands, and are extensively used for feeding the breed of sheep to which they give their name. Coal-measures occupy an area of 180 square miles, and yield immense quantities of coal; lead, iron, limestone, and freestone are also wrought. Arable and stock husbandry are both prosecuted with success, and the short-horned cattle mostly reared are much prized. The chief industries include shipbuilding and rope-making; forges, foundries, iron, hardware, and machine works, chemical works, potteries, glass-works, etc. The coast abounds in cod, ling, haddock, soles, turbot and herrings. Pop. 697,014.

Northumbria (north-um'bri-a), one of the seven Saxon kingdoms of Britain, which extended from the Humber to the Forth, and was bounded on the west by the kingdoms of Strathclyde and Cumbria. It was founded by Ida, an Anglian chief, in 547, and at first extended only from the Tyne to the Forth, and was known by the name of Bernicia. In 560 the Kingdom of Deira, the district between the Tees and the Humber, was added to Northumbria. During the eighth century it was the home of Bede, Alcuin, Egbert, and other great scholars. It was the scene of important events in English history till the grant of the Lothians to the King of Scots, and its final conquest by William I.

Northwest Passage, a passage for ships from the Atlantic Ocean into the Pacific by the northern coasts of the American continent, long sought for, and at last discovered in 1850-51 by Sir R. MacClure and traversed by Roald Amundsen in 1906.

Northwest Territories, formerly that portion of northwestern Canada outside the provinces of Ontario, Quebec, Manitoba and British Columbia, originally the Hudson Bay Territory; with an area estimated at over 2,600,000 sq. miles. This region was ruled by a lieutenant-governor and a council of seven members, there being also a legislative assembly partly elected, partly nominated. Regina was the seat of government. The southern part of this vast territory, divided into the districts of Assiniboia (89,535 sq. m.), Saskatchewan (107,092 sq. m.), Alberta (106,100 sq. m.) and Athabasca (104,500 sq. m.), was converted in 1905 into the two provinces of Alberta and Saskatchewan. The remainder is divided into the districts of Yukon, Keewatin, Ungava, Franklin and Mackenzie. The agricultural and other capabilities of at least a third of this region are very great, there being vast areas adapted for wheat, oats, barley, etc., or for stock-rearing; and land in the provinces just mentioned is being rapidl. taken up. Coal is abundant, and is now being worked; petroleum also is abundant; copper, silver, iron, salt, and gold have been found in various localities. Great quantities of furs are obtained, especially by the agents and employees of the Hudson Bay Company, to whom the whole territory formerly belonged, and who have many outlying forts and stations. There are many lakes and rivers, the former including Athabasca, Great Slave Lake, Great Bear Lake, etc.: and the latter the Saskatchewan, Athabasca, Peace, Mackenzie, etc., giving 10,000 miles of navigable rivers. Pop. (1911) 16,951. (See *Canada.*)

North Yakima, a city, capital of Yakima County, Washington, 4 miles from Yakima. It

has many lumber and saw mills. Pop. 14,082.

Northwich (nōrth'wich), a town in Cheshire, 15 miles northeast of Chester, with numerous brine springs and extensive mines of rocksalt. Pop. 18,151.

Norton (nor'ton), CAROLINE, an English poetess and novelist, grand-daughter of Richard Brinsley Sheridan; born in 1808; died in 1877. She married in 1829 the Hon. George C. Norton; but the marriage did not prove a happy one, and from 1836 she lived apart from her husband. After the death of the latter, in 1875, she married Sir W. Stirling-Maxwell.

Norton, CHARLES ELLIOT, author, was born at Cambridge, Massachusetts, in 1827; died in 1908. He was graduated at Harvard, traveled extensively in the east, and in 1864-68 was an editor of the *North American Review*. He became professor of art history at Harvard in 1874. He wrote *The New Life of Dante, Church Building in the Middle Ages in Italy, The Divine Comedy of Dante,* etc.

Norton, CHARLES LEDYARD, author, born at Farmingham, Connecticut, in 1837. He served in the Civil war, was successively editor of *The Christian Union, Domestic Monthly, American Canoeing, Outing*, etc. Wrote *A Handbook of Florida, Canoeing in Kanuckia* (with John Habberton) and several novels.

Norwalk (nor'wąk), a city, capital of Huron County, Ohio, 16 miles S. by E. of Sandusky. It has railroad shops, and manufactures pianos, organs, shoes, umbrellas, tobacco and wood specialties. Pop. 7858.

Norwalk, a city of Fairfield County, Connecticut, on Norwalk River, 14 miles S. W. of Bridgeport. It has various academic institutions and a variety of manufactures. It is a summer resort, being a convenient place of summer residence for New York merchants. Pop. 24,211.

Norway (nōr'wā; Norwegian, NORGE), a country in the north of Europe, bounded on the notheast by Russian Lapland, and east by Sweden, and washed on all other sides by the sea—by the Arctic Ocean on the north, the Atlantic and the North Sea on the northwest and west, and the Skager-Rack on the south. It is about 1080 miles in length, and its greatest breadth is about 275 miles, but towards the north it narrows so much as to be in some places not more than 20 miles; area, 124,495 square miles, or rather more than the British Isles. The country is divided into twenty prefectures, of which the capital Christiania forms one, and the city of Bergen another. Other important towns are Trondhjem, Stavanger and Drammen. Pop. 2,239,880.

Physical Features.—The coast consists chiefly of bold precipitous cliffs, and is remarkable both for the innumerable islands by which it is lined, and the bays or fiords which cut deeply into it in all directions. The surface is very mountainous, particularly in the west and north. Very commonly the mountain masses assume the form of great plateaus or tablelands, called *fjelds* or *fields*, as the Dovre Fjeld, Hardanger Fjeld, etc. The highest summits belong to the Sogne Fjeld, a congeries of elevated masses, glaciers, and snowfields in the center of the southern division of the kingdom, where rise Galdhoepig (8400 feet), the Glitretind (8384), and Skagastölstind (7879). Immense snowfields and glaciers are a feature of Norwegian scenery. The few important rivers that Norway can claim as exclusively her own have a southerly direction, and discharge themselves into the Skager-Rack; of these the chief are the Glommen (400 miles), and its affluent, the Lougen. The most important river in the north is the Tana, which forms part of the boundary between Russia and Norway, and falls into the Arctic Ocean. Lofty waterfalls are numerous. Lakes are extremely numerous, but generally small. The principal is the Miösen Vand. The prevailing rocks of Norway are gneiss and mica-slate, of which all the loftier mountains are composed. The most important metals are iron, copper, silver and cobalt, all of which are worked to a limited extent. The climate of Norway is on the whole severe. The harbors on the west, however, are never blocked up with ice; but in places more inland, though much farther south, as at Christiania, this regularly happens. The forests are estimated to cover about a fifth of the whole surface, and form a very important branch of national wealth. The principal forest tree is the pine. The oak forms fine forests in the south; the birch is the most northerly tree. Only about 1000 sq. miles is under the plough. The chief cereal crop is oats. Barley ripens at 70° of latitude; rye is successfully cultivated up to 69°; oats to 68°; but wheat not beyond 64°, and that only in the most favorable seasons. Potatoes are grown with success even in the far north. The farms are generally the property of those who cultivate them, and commonly include a large stretch of mountain pasture, often 40 or 50 miles from the

main farm, to which the cattle are sent for several months in summer. The rearing of cattle is an extensive and profitable branch of rural economy. The horses are vigorous and sure-footed, but of a diminutive size; the ponies are among the best of their kind, and are often exported. The reindeer forms the principal stock in the extreme north. Among the larger wild animals are the wolf, bear, elk, deer. The fisheries of Norway are of very great value; they include the cod, herring, mackerel, salmon, shark, walrus, seal and lobster, the cod and herring fisheries being by far the most important. The rivers and lakes abound with salmon and salmon-trout, and make Norway one of the best angling countries in the world. Manufactures include cotton, woolen, flax and silk tissues. Distilleries, brickworks, saw and flour mills are numerous; and there are foundries machine works, match works, tobacco factories and sugar refineries. The export trade includes fish, timber, wood-pulp, whale and sea oil, metals, skins, feathers, furs, matches, etc. The chief imports are grain, textile goods, wool, sugar, coffee, tobacco, wine, brandy, petroleum, etc.; chief trade is with Britain and Germany; Sweden, Denmark and Russia coming next. The Norwegians are famous as sailors, and the country possesses the largest mercantile navy in Europe next to Britain. Bergen, Christiania and Trondhjem are the chief ports. The monetary system is the same as that of Denmark.

Government, People, etc.—Norway is a limited monarchy, until 1905 united with Sweden as a free and independent kingdom. The king could not nominate any but Norwegian subjects to offices under the crown. On a new succession the sovereign must be crowned King of Norway at Trondhjem. The members of the legislative assembly or Storthing are elected every three years by voters who have themselves been elected by the citizens possessing a certain qualification. It subdivides itself into two chambers—one, the Lagthing, consisting of one-fourth of the members; the other, the Odelsthing, has the remaining three-fourths. The chambers meet separately, and each nominates its own president and secretary. Every bill must originate in the Odelsthing. When carried in that body it is sent to the Lagthing, and thence to the king, whose assent makes it a law. The great body of the people are Protestants of the Lutheran confession, which is the State religion. Other sects are tolerated, although government offices are open only to members of the established church. Elementary education is free and compulsory. Besides primary schools there are numerous secondary schools. There is but one university, that of Christiania. The army is raised mainly by conscription. The nominal period of service is thirteen years, five in the line, four in the *Landværn* (liable to be called to defend the country), and four in the *Landstorm* (for local defense). The navy comprises four iron-clads besides other vessels. The revenue in 1909 was $38,749,-682; public debt, $88,253,614. The people are almost entirely of Scandinavian origin.

History.—In the earliest times Norway was divided among petty kings or chiefs (*jarls*), and its people were notorious for their piratical habits. (See *Northmen.*) Harold Fair-hair (who ruled from 863 to 933) succeeded in bringing the whole country under his sway, and was succeeded by his son Eric. The latter was ultimately driven from the throne, which was seized in 938 by his brother, Hako I, who had embraced Christianity in England. Magnus the Good, the son of St. Olaf and Alfhild, an English lady of noble birth, was called to the throne in 1036; and having in 1042 succeeded also to the throne of Denmark, united both under one monarchy. (See *Denmark.*) After his death the crowns of Norway and Denmark again passed to different individuals. In 1319 the crowns of Norway and Sweden became for a short time united in the person of Magnus V. Eric of Pomerania succeeded, by separate titles, to Norway, Sweden and Denmark; and in 1397 was crowned king of the three kingdoms. Sweden afterwards for a time was a separate kingdom; but the union between Denmark and Norway was drawn closer and closer, and very much to the disadvantage of the latter, which was ultimately degraded into a mere dependency of the former. The subsequent history of Norway becomes for a long period merely a part of that of Denmark. After the defeat of Napoleon by the allies in 1813 it was arranged by the treaty of Vienna in 1814 that Denmark must cede Norway to Sweden, and the result was the union of the two countries under the Swedish crown. The union was not long unaccompanied with a certain amount of friction, partly owing to the entirely democratic character of the constitution of Norway, in which country titles of nobility were abolished early in the last century. The right claimed by the king to veto absolutely bills passed by elected representatives met with an overwhelming protest by the people, the struggle

lasting until 1905. In 1891 an election held for members of the Storthing resulted in a majority for the party which advocated the appointment of separate foreign ministers and consuls for Sweden and Norway, and at every subsequent election this majority was increased, Sweden persistently refusing to make concessions, Norway formally seceded from the union early in 1905. For a time war between the two countries seemed imminent, but Sweden consented to negotiate, and a treaty was concluded sanctioning the separation. Then the Norwegian parliament selected for king Prince Charles of Denmark, and submitted the choice to the sanction of a popular vote taken on November 12 and 13, when the selection was ratified by an overwhelming majority. On November 25, 1905, the new king was very heartily welcomed in Christiania. See *Hakon VII.*

Norwich (nor'ich), borough and bishop's see of England, the seat of the county of Norfolk, on the Wensum, where it joins the Yare, 98 miles N. N. E. of London. It is a picturesque old town, and with its gardens and orchards covers a large area. The cathedral, founded in 1094, was originally in the Norman style, but now exhibits also later styles. It is a fine edifice with extensive cloisters, and a lofty tower and spire 315 feet high. The castle, a noble feudal relic, reputed to have been built by Uffa about 1066, is finely situated on a lofty eminence, and still surmounted by its massive donjon tower in the Norman style. St. Andrew's Hall, originally the nave of the Blackfriars' Church, the Guildhall, and the bishop's palace, also deserve mention. Manufactures, of which worsted and mixed goods are the staple, are extensive, including also mustard and starch, boot and shoe making, iron working, brewing, etc. The foundation of Norwich cannot be fixed earlier than 446. Rising to the position of capital of the Kingdom of East Anglia, it had, by the middle of the tenth century, become a large and wealthy town; but in 1002 it was laid in ashes by the Danes. Shortly after rebuilt by the Danes themselves, it had become in the eleventh century a large and populous place. In 1296 it began to send representatives to parliament. In 1328 Edward III made it a staple town for the counties of Norfolk and Suffolk, and induced great numbers of Flemings to settle in it. Pop. 121,493.

Norwich, a village, capital of Chenango County, New York, on the Chenango River, 42 miles N. E. of Binghamton. It has railroad shops, blast furnaces, a hammer factory, and other industries. Pop. 7422.

Norwich, a city, semi-capital of New London County, Connecticut, on the Thames River, 13 miles N. of New London. The falls of the river here afford extensive water power, and the manufacturing industries are large and numerous, including cotton and woolen goods, paper and leather, locks, machinery, cutlery, firearms, etc. There is considerable shipbuilding. Pop. 28,219.

Norwood, a town (township), of Norfolk County, Massachusetts, 14 miles S. S. W. of Boston. It has tanneries, printing ink works and railroad repair shops. Pop. 8014.

Norwood, a village of Hamilton County, Ohio, 10 miles N. E. of Cincinnati, of which it is a suburb and post substation. It manufactures hardware and wood specialties, paper goods, cards, carriages, etc. Pop. 16,185.

Nose (nōs), the organ in man and the higher animals exercising the olfactory sense, or that of smell, and concerned through its apertures or passages in the function of respiration and in the production of voice. The bones of the nose comprise the boundaries of the nasal *fossæ* or cavities, which open in front in the nasal apertures, and behind into the pharynx or back part of the mouth. The front nostrils, or openings of the nose, are in the skeleton of an oval or heart shape, while the openings of the posterior nostrils are of a quadrilateral form. The bones which enter into the entire structure of the nose number fourteen. In addition there are certain cartilaginous pieces which assist in forming the structure of the nose, lateral cartilages on either side, and a cartilaginous septum in the middle between the two nostrils. There is also a bony septum which unites with the cartilaginous septum to form the complete partition of the nose. Several special muscles give a certain mobility to the softer parts of the organ. The nostrils and nasal cavities are lined by the mucous membrane (*pituitary* membrane) richly furnished with arteries and veins covered with a copious mucous secretion which keeps it in the moistened state favorable to the due exercise of the function of smell. The proper nerves of smell, the *olfactory* nerves, form the first pair of cerebral nerves or those which take origin from the cerebrum; while the nerves of common sensibility of the nose belong to the fifth pair of cerebral nerves. The olfactory nerves are distributed in the mucous membrane of either side in the form of a sort of

thick brush of small nerve fibers. The study of the comparative anatomy of the nasal organs shows that man possesses a sense of smell greatly inferior in many instances to that of the lower animals. The distribution of the olfactory nerves in man is of a very limited nature when compared with what obtains in such animals as the dog, sheep, etc. All vertebrates above fishes generally resemble man in the essential type of their olfactory apparatus. In most fishes the nostrils are simply shut or closed sacs, and do not communicate posteriorly with the mouth. The proboscis of the elephant exemplifies a singular elongation of the nose, in which the organ becomes modified for tactile purposes. In the seals and other diving animals the nostrils can be closed at will by sphincter muscles or valvular processes. The most frequent diseases or abnormal conditions which affect the nose comprise congenital defects, and tumors or polypi.

Nosology (nos-ol-ō′ji; from the Greek *nosos*, disease), in medicine, that science which treats of the systematic arrangement and classification of diseases, with names and definitions, according to the distinctive character of each class, order, genus and species. Many systems of nosology have been proposed at different times, but that of Dr. William Farr has been very generally adopted as practically useful. By this system all diseases are classed under the heads of (1) Zymotic Diseases, including fevers and all diseases that may be attributed to the introduction of some ferment or poisonous matter into the system; (2) Constitutional Diseases, as gout, rheumatism, cancer, scrofula, consumption, etc.; (3) Local Diseases, as diseases connected with the nerves, circulation, digestion, respiration, urinogenital system, skin, etc.; and (4) Development Diseases, as malformations, special diseases of women, diseases connected with childhood or old age, etc.

Nossi-bé (nos-sē-bā′), an island off the northwest coast of Madagascar, belonging to France. It is about 14 miles long by 8 miles broad, has a mountainous surface, and appears to be of volcanic origin. It is very fertile, and has a population of (1902) 9291. Rice, maize, manioc, and bananas are the principal products, and the sugar-cane and the coffee-plant are successfully cultivated. It has a splendid harbor.

Nossi Ibrahim, or SAINTE MARIE, an island on the east coast of Madagascar, 33 miles in length, with an average breadth of 12 miles, separated from the island of Madagascar by a channel 5 miles in width. It has been a French possession definitely since 1815. It is neither fertile nor healthy. Pop. 7654.

Nostalgia. See *Homesickness.*

Nostoc (nos′tok), a genus of green-spored gelatinous algæ, frequent especially in sandy soils and immediately after rain in summer, and vernacularly called *witches' butter, fallen stars*, etc. Many of the species are edible, the *N. cdūle* of China being a favorite ingredient in soup.

Nostradamus (nōs-tra-dā′mus), true name MICHEL DE NOSTREDAME, a French physician and astrologer, born in 1503; died in 1566. He belonged to a Jewish family. He studied first at Avignon, and afterwards at the medical school of Montpellier. After taking his degree he acted for some time as a professor, but afterwards settled as a medical practitioner at Agen, and finally, after traveling in Italy, at Salon, near Aix, about 1544, where he wrote his famous *Prophéties* or astrological predictions written in rhymed quatrains. They obtained great success, although many condemned their author as a quack. Catharine de' Medici invited him to court to cast the horoscope of her sons; the Duke of Savoy traveled to Salon for the express purpose of visiting him, and on the accession of Charles IX he was appointed royal physician. In 1550 he published an almanac containing predictions about the weather, the first of a numerous family of such productions.

Nota (nō′tà), ALBERTO, an Italian dramatic poet, born in 1755; died in 1847. Of his numerous comedies, *La Fiera*, a graphic and amusing description of manners, is perhaps the best. Many of them have been translated into French, Spanish, German, etc.

Notables (nō′ta-blz), in French history, a body consisting of noblemen, archbishops, high legal functionaries, magistrates of cities, etc., appointed and convoked from time to time by the king, as being a more pliant instrument than the states-general. The first assembly of notables of any importance was in 1558. For long there had been no meeting, but the troubles preceding the revolution led to the notables being assembled in 1787. A second meeting was held in November, 1788, to consult on the manner of assembling the States-general; but soon after everything was overturned by the revolution.

Notary (nō′ta-ri), an officer authorized to attest contracts or writings, chiefly in mercantile matters,

to make them authentic in a foreign country; to note the non-payment of foreign bills of exchange, etc. Often called a *Notary Public.*

Notation, ARITHMETICAL, ALGEBRAIC, CHEMICAL, MUSICAL. See *Arithmetic, Algebra, Chemistry, Music.*

Note (nōt), in music, a character which, by its place on the staff, represents a sound, and by its form determines the relative time or continuance of such sound. See *Music.*

Not Guilty, is the general issue or plea of the accused in a criminal action. When a prisoner has pleaded not guilty he is deemed to have put himself forward for trial, and the court may order a jury for the trial of such person accordingly. Should he refuse to plead the court may direct the proper officer to enter a plea of not guilty on his behalf. On an indictment for murder a man cannot plead that it was in his own defense, but must answer not guilty; the effect of which is, that it puts the prosecutor to the proof of every material fact alleged in the indictment, and it allows the prisoner to avail himself on any defensive circumstance as fully as if he had pleaded them in a specific form. In England and the United States a jury can only give a verdict either of guilty or not guilty, and the latter often really means that there is not sufficient evidence to convict. In such circumstances the verdict in Scotland would be 'not proven'; a verdict of not guilty in that country meaning that the accused is entirely innocent of the charge alleged.

Noto (nō'tō), a town of Sicily, in the province of Syracuse, on the left bank of the Noto, near its mouth in the Ionian Sea. It was a place of great strength under the Saracens, and one of the most agreeably situated and best-built towns in the island. Pop. 22,564.

Notochord (nō'tō-kord), in animal physiology, a fibro-cellular rod which is developed in the embryo of vertebrates immediately beneath the spinal cord. It is persistent in the lower vertebrates, but in the higher is replaced in the adult by the vertebræ, which are developed in its surrounding sheath. It is often spoken of as the *chorda dorsālis.*

Notornis (nō-tor'nis), a genus of grallatorial or wading birds, found inhabiting the South Island of New Zealand. It was first known to science by the discovery of fossil remains, but subsequently the genus was found to be still represented by living forms. The Notornis is most nearly allied to the Coots. It is, however, of larger size than these birds, and differs from them in the rudimentary nature of the wings.

Nototherium (not-ō-thēr'i-um), an extinct genus of marsupial or kangaroo-like animals, the fossil remains of which are found in deposits of the Upper Pliocene age in Australia. The *Nototherium Mitchelli* is a described species of this extinct genus.

Not Proven, in Scotch law, a verdict returned by a jury when there is not sufficient evidence to convict the prisoner at the bar, while there is some apparent foundation for the charge. Its practical effect is equivalent to a verdict of 'not guilty' (but with an essential difference—see *Not Guilty*), and the accused cannot be tried afterwards for the same offense.

Notre Dame (nō-tr dâm; French, 'Our Lady'), a title of the Virgin Mary, is the name of many churches in France, and particularly of the great cathedral at Paris, which was founded in the twelfth century, and forms a prominent object in the city.

Nottingham (not'ing-am), a town near the middle of England, capital of the county of same name, on the Leen, near its junction with the Trent, 110 miles northwest of London. It occupies a picturesque sight overlooking the Vale of Trent, and has one of the finest and largest market places in the kingdom. The castle, which crowns the summit of a rock, rising 133 feet above the level of the Leen, was originally built by William the Conqueror as a means of overawing the outlaws frequenting the recesses of Sherwood Forest. Dismantled during the Protectorate, it subsequently became the property of the Duke of Newcastle, who in 1674 erected a large mansion on part of the site. This, after being partly burned in riots connected with the reform movement in 1831, now contains the Midland Counties Art Museum, free library, etc. The principal educational and literary institutions are the University College and Technical School, high-school for boys, the Blue-coat School, the school of art, the People's Hall, and the Mechanics' Institute. An arboretum covering 18 acres is a feature of the town. The staple manufactures are hosiery and lace, the latter being a sort of specialty. There are also manufactures of cotton, woolen, and silk goods, and of articles in malleable and cast-iron. Nottingham was a place of importance in Anglo-Saxon times, and was twice or thrice taken by the Danes. Charles I raised his standard here in 1642, and next year the town and castle were taken by the Parliamentar-

ians. Serious riots, occasioned by the introduction of machinery, took place in 1811-12 and 1816-17. Pop. 259,942.—NOTTINGHAMSHIRE, also called NOTTS, is an inland county, bounded north by York, east by Lincoln, south by Leicester, and west by Derby. Area, 826 sq. miles. The general surface, with exception of the Vale of Trent, is undulating. The principal river is the Trent, with its affluents, the Soar and Idle. The greater portion of its area is composed of rocks of the Permian and New Red Sandstone systems. The chief mineral is coal. The soil is generally extremely fertile. The crops usually cultivated are wheat, rye, barley, oats, beans and peas. The manufactures include lace, hosiery, machinery, silk and cotton spinning, bleaching, coal-mining, iron and brass founding, glove-making, etc. Pop. 604,077.

Nottingham, HENNAGE FINCH, FIRST EARL OF, was the son of Heneage Finch, recorder of the city of London, and was born in 1621; died in 1682. He was an ardent royalist, was called to the bar in 1645, and at the Restoration was appointed solicitor-general, in which capacity he signalized his zeal in the prosecution of the regicides. In 1661 he was elected member for the University of Oxford, and obtained a baronetcy, and six years afterwards took a prominent part in the impeachment of the Earl of Clarendon. In 1670 he became attorney-general, and in 1675 he obtained the chancellorship. In 1681 his services were rewarded with the earldom of Nottingham. Dryden has handed down to posterity his portrait in *Absalom and Achitophel*, under the character of *Amri*.

Notturna. See *Nocturne*.

Noukha. See *Nucha*.

Nouméa (nö-mā'à; also called PORT DE FRANCE), is the chief settlement in the French penal colony of New Caledonia (which see). Pop., besides convicts and soldiers, 6968.

Noumenon (nou'me-non; pl. NOUMENA), in Kant's philosophy, an object conceived by the understanding or thought of by the reason, as opposed to a *phenomenon*, or an object such as we represent it to ourselves by the impression which it makes on our senses. The *noumenon* is an object in itself, not relatively to us.

Noun (from the Latin *nomen*, name), in grammar, a word that denotes any object of which we speak, whether that object is animate or inanimate, material or immaterial. Nouns are called *proper* or *meaningless* when they are the names of individual persons or things, as George, Berlin, Orion; *common*, when they are the name of a class of things, as book, page, ball, idea, emotion; *collective*, when they are the names of aggregates, as fleet, army, flock, covey, herd; *material*, when they are the names of materials or substances, as gold, snow, water; *abstract*, when they are the names of qualities, as beauty, virtue, grace, energy. Some of the older grammarians included both the noun and the adjective under the term *noun*, distinguishing the former as *noun-substantive* and the latter as *noun-adjective*.

Noureddin Mahmoud, MALEK-AL-ADEL, one of the most distinguished of the Moslem rulers of Syria, succeeded his father as emir of Aleppo in 1145. On attaining power he proceeded to grapple with the Christians, and inflicted a disastrous defeat upon them under the walls of Edessa, taking that city by storm. This disaster to the Christian arms occasioned the second crusade. Noureddin now attempted to expel the Christians from Palestine, and before 1151 all the Christian strongholds in Syria were in his possession. An illness, however, which prostrated him in 1159, enabled the Christians to recover some of their losses; and when well enough to take the field he suffered defeat at the hands of Baldwin, king of Jerusalem. Afterwards, however, he overthrew the Christian princes of Tripolis and Antioch, making prisoners of them both. Subsequently Noureddin overran Egypt, and was invested with the governorship of that country and of Syria. He died at the height of his success in 1174.

Novalis (nō-vål'is). See *Hardenberg, Friedrich von*.

Novara (nō-vā'ra), a town of Northern Italy, capital of province of same name, beautifully situated between the Agogna and Terdoppia, 53 miles E. N. E. or Turin. Its rice and grain markets are the most important in Piedmont. Novara is famous for the battle fought there on March 23, 1849, between the Sardinians and Austrians, in which the former were completely defeated, and Charles Albert induced in consequence to abdicate in favor of his son Victor Emmanuel. Pop. 37,962.

Nova Scotia (nō'vā skō'shi-à), a province of the Dominion of Canada, consisting of a peninsular or portion properly called Nova Scotia, and the Island of Cape Breton, which is separated from the mainland by the Strait or Gut of Canso. It is bounded on the

north by Northumberland Strait and the Gulf of St. Lawrence; northeast, south, and southeast by the Atlantic; west by the Bay of Fundy; and north by New Brunswick, with which it is connected by an isthmus only 11 miles broad (traversed by a ship railway); area, 20,907 square miles. Of the whole about 5,000,000 acres are fit for tillage. The southeastern coast is remarkable for the number and capacity of its harbors. There are no mountains of magnitude, but ranges of hills traverse the peninsula on the northwest side. There are a number of lakes, but no streams of great size. The forests are extensive and valuable. There is much beautiful scenery, and the climate is the most equable in Canada. The wild animals include bear, foxes, moose, caribou, otter, mink, etc., and excellent sport may be had. The minerals are also valuable. Granite, trap, and clay-slate rocks predominate. Coal, with iron in combination, abounds in many places, and more than 1,500,000 tons are raised annually. Gold is also found, and is being worked. Copper ore exists, as also silver, lead, and tin; gypsum is plentiful. Petroleum has been recently discovered, and wells have been sunk in Cape Breton. Wheat, potatoes, and oats are important crops; and buckwheat, rye, barley, Indian corn, and field peas are extensively cultivated. Great quantities of hay are made, and a good deal is exported. The apple orchards of the western counties are very productive, and extend along the highway in an unbroken line for 30 miles. Apples are now largely exported. Cattle and sheep are raised in considerable numbers, and are exported both to New Brunswick and Newfoundland. There are extensive fisheries of cod, haddock, mackerel, herrings, etc. The manufactures are comparatively unimportant, but a good deal of capital is invested in saw mills, flour mills, shipbuilding, tanning, etc. The foreign trade is comparatively large, more shipping being owned in proportion to population than in any other country. The imports consist principally of British and American manufactures; spirits, sugar, wines, coffee, etc. The principal articles of export are fish, timber, and coal. Education is widely and equally diffused and is free to all classes. There are four degree-conferring colleges or universities. The public affairs of the colony are administered by a lieutenant-governor, council, and house of assembly. The laws are dispensed by a supreme court and district courts as in Canada. Halifax, the capital, possesses one of the finest harbors in America. The province is well provided with railways.

Nova Scotia was visited by the Cabots in 1497, and was first colonized in 1604, when French settlements were made at Port Royal, St. Croix, etc. Under the French Nova Scotia (with New Brunswick) was known as Acadia or Acadie. The French colonists were more than once almost entirely driven out by the English. In 1621 Sir William Alexander obtained from James I a grant of the country, but his attempt to colonize it proved a failure. In 1654 Cromwell took possession of the country, which remained with the English till 1667, when it was ceded to France. But in 1713 the country was again ceded to England. Its population was largely French, and in 1755, during the French and Indian war, thousands of them were forcibly removed from the country on the accusation of hostility to the English. In 1763 the island of Cape Breton was annexed to Nova Scotia, but was separated in 1784-1820. In 1784 New Brunswick was detached. In 1867 the province became a member of the Dominion of Canada. Pop. (1911) 492,338.

Novatians (nō-vā′shanz), in church history, a sect founded in the middle of the third century by Novatianus of Rome and Novatus of Carthage, who held that the lapsed might not be received again into communion with the church, and that second marriages are unlawful. Novatianus is said to have suffered martyrdom about 255 A.D. Several writings of his remain.

Nova Zembla (nō′va zem′blâ; Russian, *Novaia Zemlia*), two large islands in the Arctic Ocean, belonging to Russia, and lying north from the northeastern corner of European Russia, separated from each other by the narrow strait Matotchk in Shar; length, 635 miles; breadth, 170 miles. The coasts swarm with seals, fish, and water-fowl. The interior is covered with stunted shrubs, short grass, and moss, and is frequented by reindeer, white bears, ermines and Arctic foxes. It has no permanent inhabitants, but is visited by Russian hunters and fishers.

Novel (nov′el), a prose narrative of fictitious events connected by a plot, and involving portraitures of character and descriptions of scenery. In its present signification the term novel seems to express a species of fictitious narrative somewhat different from a *romance*, yet it would be difficult to assign the exact distinction, though the former is generally applied to narratives of everyday life and manners; while the romance deals with what is ideal, marvelous, mysterious, or supernatural. Prose fiction

written for entertainment is of considerable antiquity. Among the Greeks we find mention of a collection of stories known as the *Milesian Tales*, before which a sort of historical romance, the *Cyropædia*, had been produced by Xenophon (445-359 B.C.). There were several other Greek writers of fiction before the Christian era, but the most notable name is that of Heliodorus (which see) in the fourth century after Christ. He was followed by Achilles Tatius, Longus, and other writers of fiction. Among the Romans the chief names are Petronius Arbiter and Appuleius. The romances of the middle ages were largely metrical in form (see *Romance*), and prose fiction, as we at present understand it, is of comparatively modern growth. It had its early beginnings in the stories of Boccaccio, contained in his *Decameron* (1358). The success of this collection gave rise to numerous imitations, and since that time the development of the novel has been steadily progressive. At first we have nothing but tales of love-intrigue, as in the *Deeameron*, in the *Cent Nouvelles Nouvelles* (fifteenth century), and the *Heptameron* of Margaret of Navarre (1559). But during the sixteenth and seventeenth centuries there is very marked progress, writers beginning very materially to enlarge and vary their sphere; and we now find produced the comic romance, the *picaresque* romance, or romance of amusing roguery, and the pastoral romance. The first variety is worthily represented by the *Garagantua and Pantagruel* of Rabelais (died 1553). Next in point of data comes the *Vita di Bertoldo* of Julio Cesare Croce, a narrative of the humorous and successful exploits of a clever peasant, which was as popular for two centuries in Italy as *Robinson Crusoe* in England. Some years after appeared the *Don Quixote* of Cervantes (1605), which gave the death-blow to the romance of chivalry. About the same time the first of the *picaresque* romances was given to the Spanish public. In this branch Matteo Aleman gives us in *Guzman Alfarache* a hero who is successively beggar, swindler, student, and galley slave. It gave birth to a host of similar romances, and is said to have suggested to Le Sage the idea of *Gil Blas*. The *Areadia* of Sir Philip Sydney blends pastoral with chivalrous manners, and marks the transition to the romances of conventional love and metaphysical gallantry. In the seventeenth century prose fiction in most of its leading types had become an established form of literature in the principal languages of Europe. The full-fledged modern English novel may be said to date from Defoe. The effect of his *Robinson Crusoe*, *Colonel Jack*, *Moll Flanders*, etc., is caused by the delineation and skilful combination of practical details, which give to the adventures the force of realities. The novel of everyday life and character drawing owes its first real introduction in England to the era of Richardson, Fielding and Smollett, of whom Richardson and Fielding were the most original and still rank among the masters of English fiction. The *Tristram Shandy* of Sterne displays admirable character painting, and humor deeper and finer in quality than that of his contemporaries, but can hardly be said to have any plot. Next appeared Goldsmith's *Vicar of Wakefield*, which possesses a higher moral tone than any that had preceded it. Among the best works of secondary rank may be mentioned Johnson's *Rasselas*, Walpole's *Castle of Otranto*, Madame D'Arblay's *Evelina*, and Beckford's *Vathek*. Ranking below these are the novels or romances of horrors, represented by the *Mysteries of Udolpho* and others by Mrs. Radcliffe, M. G. Lewis' *Monk*, and Maturin's *Montorio*. A return to stricter realism was manifested in Miss Edgeworth and Miss Austen, who describe domestic life with minuteness, good sense, a clear moral aim, and charming simplicity of style. In France, among the novels treating of social life in the eighteenth century the most prominent are the *Vie de Mariamne* and the *Paysan Parvenu* of Marivaux, *Manon Lescaut*, by the Abbé Prévot, the *Nouvelle Héloise*, and the *Emile* of Rousseau, containing the author's theories of love, education, religion and society. In the department of humorous and satirical fiction the palm belongs to Le Sage, author of *Gil Blas*, the *Diable Boiteux*, etc. As a writer of satirical fiction Voltaire is entitled to high rank by his *Candide*, *Zadig*, *Princesse de Babylone*, etc. The translation of the *Arabian Nights' Entertainments* by Galland (1704-17) revived the taste for the exaggerations of eastern fiction, and brought a variety of works into the field teeming with genii, magicians, caliphs, sultans, princesses, eunuchs, slaves, etc. In Germany three great names tower above all others—*Wieland*; *Jean Paul Richter*, whose works abound in strokes of humor, pathos, and fancy; and *Goethe*, whose novels are attempts to represent or solve the great problems of life and destiny. Popular romantic legendary tales (*Volksmärchen*) constitute a special department of German literature, which was successfully cultivated by Ludwig, Tieck, De la Motte Fouqué, Chamisso, Clemens Brentano, Zschokke, Hoffmann, Musäus, and others.

In entering upon the present epoch of the novel we meet with the name of the author of *Waverley*. Sir Walter Scott introduced a new era in the history of English fiction, and may be said to have created the modern historical novel. Since his day the British novelists are perhaps the most numerous class in the list of authors; and among the more prominent we may note Galt, Lady Morgan, Charles Lever, Mrs. Gore, Theodore Hook, Disraeli, Bulwer-Lytton, Dickens, Thackeray, James, Ainsworth, the sisters Brontë, Mrs. Trollope, Anthony Trollope, Mrs. Craik, Kingsley, Marryat, George Eliot, Wilkie Collins, Miss Braddon, Mrs. Oliphant, Miss Thackeray, Miss Yonge, Thomas Hughes, Charles Reade, William Black, Thomas Hardy, Richard Blackmore, Walter Besant, W. E. Norris, James Payn, Clark Russell, Christie Murray, Rider Haggard, R. L. Stevenson, George Meredith, Hope and F. Anstey; besides whom there are a number of clever rising men. In the United States it was not till after the revolution that the earliest attempts in prose fiction were made. The first notable adventurer in this field was Charles Brockden Brown, who was followed by J. Fenimore Cooper, Washington Irving, Edgar A. Poe, Nathaniel Hawthorne, Harriet Beecher Stowe and Oliver Wendell Holmes. After these come a younger, and in some respects a more markedly American school, represented by such names as Bret Harte, Henry James, Crawford, Howells, Cable, and various others of still more recent date. The most celebrated of the French novelists of the nineteenth century are Madame de Staël, Châteaubriand, Victor Hugo, Dumas (father and son), Balzac, Alphonse Karr, Georges Sand, Feuillet, Prosper Mérimée, Edmond About, Erckmann-Chatrian, Zola, Daudet, etc. The more noteworthy names in the German literature of fiction are those of Gutzkow, Wilibald Alexis (Wilhelm Häring), Hackländer, Spielhagen, Gottfried and Johanna Kinkel, Auerbach, Rodenberg, G. zu Putlitz, Gustav Freytag, Paul Heyse, Georg Ebers, Rosegger, and others. Among the most important novels in other languages are those in the Italian by Manzoni, in Danish by Hans Christian Andersen, in Swedish by Frederika Bremer and Madame Carlen, in Norwegian by Bjōrson and Ibsen, in Hungarian by Maurice Jokái, and in Russian by Ivan Tourguenieff and Tolstoï.

Novels, in the civil law, are the supplementary constitutions of some Roman emperors so called because they appeared after the authentic publications of law made by these emperors.

November (nō-vem'ber; from L. *novem*, nine), formerly the ninth month of the year, but according to the Julian arrangement, in which the year begins on January 1, November became the eleventh month, and comprised 30 days. See *Calendar*.

Novgorod (nov'gō-rōt), or VELIKI-NOVGOROD (*Great Novgorod*), a town of Russia, capital of the government of same name, on the Volkhov, near the point where it issues from Lake Ilmen, 103 miles S. S. E. of St. Petersburg. It was during the middle ages the largest and most important town of

Church at Novgorod.

Northern Europe. It is divided into two parts by the river, the Kreml or citadel and the trading town. The former contains the cathedral of St. Sophia, built after the model of St. Sophia at Constantinople; besides which there are numerous churches and several monasteries. Novgorod was the cradle of the Russian monarchy, and a monument was erected in 1864 to commemorate the thousandth anniversary of the foundation of the Russian State by Rurik. The trade and manufactures are now unimportant. Pop. 26,972.—The government has an area of 47,236 square miles. It is generally flat, a considerable portion of it being covered with lakes and marshes. The low range of the Valdai Hills enter it in the S. W. and form the principal watershed separating the basin of the Baltic from that of the Volga. The lakes are numerous,

and three of them of great extent—Vosje, Bielo-Osero, and Ilmen. A great part of the surface is covered by forests. The principal crops are rye, barley, oats, flax and hemp. Pop. 1,391,933.

Novi-Bazar (nō'vē-bà-zar'), a town of Bosnia, on the Rashka, a tributary of the Morava, 130 miles S. E. of Bosna-Serai. It has important fairs, and is in a position of strategic importance. Pop. 12,000.

Novice (nov'is) a candidate of either sex for a religious order; the *novitiate* being the time in which the novice makes trial of a monastic life before taking the final vows. The term of probation is at least one year, and may extend to two or three. The order is not bound to receive a novice at the end of his novitiate, neither can a novice be hindered to leave the order when the term of novitiate is expired. The age for commencing a monastic life is fixed by the Council of Trent at sixteen years.

Novikoff (nov'-e-kof), NICHOLAI IVANOVITCH, a Russian author, born near Moscow in 1744; died in 1818. He was for a time in the imperial service, but settling in Moscow he became editor of the *Moscow Gazette*, and founded the first circulating library in Russia. He published the *Old Russian Library*, a collection of historical documents; *Russian Biographies;* a *History of the Jesuits* (for which he was imprisoned), etc.

Novi Ligure (nō'vē-lē-gö'rā), a town of North Italy, province of Alessandria, 24 miles N. N. W. of Genoa. It was the scene of a French defeat in 1799. Pop. 17,868.

Novo-Moskovsk (nō-vō-màs-kovsk'), a town of Russia, government of Ekaterinoslaff, on right bank of the Samara. It has important horse and cattle fairs, tanneries, etc. Pop. 23,381.

Novo-Tcherkask (chir'kask; New Tcherkask), the chief town of the country of the Don Cossacks, in S. Russia, on the Aksai, a tributary of the Don, 40 miles from the Sea of Azov. It was founded in 1805, when the inhabitants had to remove from Old Tcherkask, on the banks of the Don, on account of inundations. It is a thriving place with a considerable trade, but the manufactures are unimportant. Pop. 52,005.

Novo-Zybkov (zip'kōf), a town of Western Russia, province Tchernigov. Pop. 11,924.

Novum Organum (nō'vum or' gan-um; 'new instrument'), the second part of Bacon's great projected work the *Instauratio Magna*, published in 1620. It is written in Latin, and along with the *Advancement of Learning* forms the foundation of the inductive or Baconian system of philosophy.

Noyes (nois) JOHN HUMPHREY, religious leader, born at Brattleboro, Vermont, in 1811; died in 1886. He graduated at Dartmouth College in 1830; first studied law, and afterward divinity, at Andover and New Haven. In 1838 he founded a community of Perfectionists near Putnoy, in 1847, one at Lenox, New York, and subsequently one at Wallingford, Connecticut. In the latter years of his life he was much influenced by Fourier and was an enthusiastic exponent of communism. He published *The Second Coming of Christ, History of American Socialism, The Way of Holiness, Home Talks*, etc.

Noyades (nwà-yäd; French, from *noyer*, to drown), the name given to the execution of political prisoners by drowning them, practiced during the French revolution, especially by Carrier at Nantes. One method adopted was that of crowding the victims into a boat, withdrawing a plug in the bottom, and casting them adrift in the deep water of a stream.

Noyau (nwo-yō'), a cordial or liqueur of various compositions, but generally prepared from white brandy, bitter almonds, sugar candy, grated nutmeg and mace, and sometimes further flavored with orange peel, the kernels of apricots, peaches, nectarines, etc.

Noyon (nwà-yōn), a town of Northeastern France, in the department of Oise, near the Oise, 44 miles E. N. E. of Beauvais. It is an ancient place, and has a cathedral, begun in the twelfth and completed early in the thirteenth century. Noyon was the birthplace of John Calvin. Pop. 5968.

Nubeculæ. Same as *Magellanic Clouds.*

Nubia (nū'bi-a), a name given, in a more or less restricted sense, to the countries of Northeastern Africa, bounded north by Egypt, east by the Red Sea, south by Abyssinia, Senaar and Kordofan, and west by the Libyan Desert. With the exception of the valley of the Nile the country is generally desert. From 1822 to the revolt of the Mahdi in 1883 the country was subject to Egypt. Then, until 1898, it acknowledged the sway of the Mahdi and his successor. The victory of Kitchener in that year restored the dominion to Egypt. Suakin or Sauakin, on the Red Sea, is the only practicable port. Khartum is the most impor-

tant inland town. Remains of ancient edifices occur throughout the whole extent, but chiefly below Dongola. The Nubians belong to the Arabian and Ethiopian races, who converge in the Nile basin; they are a handsome race, of dark-

Nubians.

brown complexion, bold, frank, cheerful, and more simple and incorrupt in manners than their neighbors either up or down the river. Their language comprises various dialects of the Negro speech of Kordofan. See *Egypt, Soudan.*

Nuble (nyö'blā), an inland province of Chile, watered by the Nuble and other streams; area, 3555 square miles. This province is noted for its fine climate and fertility. Pop. about 160,000.

Nucha, or NUKHA (nö-hä'), a town of Russia, in the Caucasian government of Elizabethpol, 120 miles E. S. E. from Tiflis. It contains a fortress and palace built by Hosein Khan in 1765, and was up to 1864 a very important sericultural center. Pop. 24,811.

Nucleus, NUCLE'OLUS. See *Cell.*

Nuddea. See *Nadiyá.*

Nudibranchiata (nū-di-bran-ki-ā'-ta) the section of 'Naked-gilled' Molluscs belonging to the class of Gasteropods. They have no shells in their adult state, and the gills are completely exposed, existing for the most part as branched or aborescent structures on the back or sides of the body. The sea-lemons, sea-slugs, etc., are examples.

Nuevo Leon. See *New Leon.*

Nuggina. See *Nagina.*

Nuisance (nū'sans), a legal term used to denote whatever incommodes or annoys; anything that produces inconvenience or damage. Nuisances are defined of two kinds—*public* or *common* and *private.* Public nuisances are annoyances in the highways, bridges and public rivers; injurious and offensive trades and manufactures, which, when hurtful to individuals, are actionable, and when detrimental to public health or convenience, punishable by public prosecution, and subject to fine according to the nature of the offense. A private nuisance may be defined as an injury or annoyance to the person or property of an individual, and not amounting to a trespass, as where one projects the eaves of his house over those of his neighbor, or stops or obstructs a right of way. Whatever obstructs passage along the public ways, or whatever is intolerably offensive to individuals in their homes, constitutes a nuisance. Causing inconvenience to one's neighbors may not in itself be a nuisance at law; there must be positive discomfort or danger. It is a nuisance if a neighbor sets up and exercises any offensive trade, or keeps noisome animals near the house of another. Nuisance, whether private or public, is rather an injurious than a criminal act. The remedy at law for the injury of nuisance is by action of trespass on the cause, in which the party injured may recover a satisfaction in damages for the injury sustained. The party ag-

Nudibranchiata—*Edlis olivacea.*

grieved has also the right to abate the nuisance by his own act; that is, he may take away or remove it, provided he commits no riot in so doing, nor occasions (in cases of private nuisance) any damage beyond what the removal of the inconvenience necessarily requires. Says Blackstone: 'The reason the law allows this summary method is because injuries of this kind require an immediate remedy, and cannot wait for the slow progress of justice.'

Nukha (nö-*hä*′). See *Nucha*.

Nullification (n u l - i-fi-kā′shun), a rendering void and of no effect, or of no legal effect; in American politics it indicates the doctrine of the extreme States' rights party, first propounded by Calhoun in 1828. He asserted the right of any state to declare the unconstitutionality of any federal law, and the right to withdraw from the Union should such law be enforced. An effort to put this doctrine into effect was made in 1832, by a South Carolina convention, which declared the tariff bill just enacted null and void, forbade the collection of duties within the state, and threatened to secede from the Union if an effort was made to enforce the law. President Jackson, by prompt and resolute action, checked this movement, but a compromise tariff bill was soon after passed to remove the cause of dispute.

Nullipore (nul′i-pōr), a name given to certain beautiful little plants of the genus *Melobesia*, common on coral islands. From secreting lime on their surface, and hence resembling coral, they were formerly supposed to be a kind of zoöphytes.

Numantia (nū-man′shi-â), an ancient town of Spain, the site of which is near the town of Soria, in Old Castile. It had great natural strength, and is celebrated for its desperate resistance to the Roman power, especially in the siege by Scipio Africanus in B.C. 134-133, when it had to surrender, though most of its defenders then surviving put themselves to a voluntary death. The town was destroyed by the conqueror.

Numa Pompilius (nū′ma pom-pil′i-us), the second king of Rome, who is said to have reigned from 714 to 672 B.C. He was of Sabine origin, and was distinguished as a philosopher and legislator, though, like the other early kings, he has more a legendary than an historical existence. He was regarded as the founder of the most important religious institution of the Romans, and left writings explanatory of his system, which were burnt by order of the senate, when accidentally discovered 400 years after his time.

Number (num′bėr), a single unit considered as part of a series, or two or more of such units. An *abstract number* is a unit or assemblage of units considered independently of any thing or things that they might otherwise be supposed to represent. For example, 5 is an *abstract number* while it remains independent; but if we say 5 feet or 5 miles it becomes a *concrete number*. *Cardinal numbers* are numbers which answer the question, 'How many?' as one, two, three, etc., in distinction from *first*, *second*, *third*, etc., which are called *ordinal numbers*. A *prime number* is a number which can be divided exactly by no number except itself and unity. A number is *even* when it is divisible by two, otherwise it is *odd*. See *Arithmetic*.

Number, in grammar, that distinctive form which a word assumes according as it is spoken of or expresses one individual or several individuals. The form which denotes one or an individual is the *singular number;* the form that is set apart for two individuals in some languages (as in Greek and Sanskrit) is the *dual number;* while that which refers indifferently to two or more individuals or units constitutes the *plural number*.

Numbering-machine, a machine for impressing consecutive numbers on account books, coupons, railway tickets, bank notes, etc. One of the principal forms of the apparatus consists of discs or wheels decimally numbered on their peripheries, the whole mounted on one axle, upon which they turn freely, acting upon each other in serial order. The first wheel of the series, containing the units, is moved one figure between each impact, and when the units are exhausted the tens come into action and act in coincidence with the units; so on of the hundreds, thousands, etc.

Numbers, Book of, the fourth of the books of the Pentateuch. It takes its name from the records which it contains of the two enumerations of the Israelites, the first given in chaps. 1-4, and the second in chap. xxvi. It contains a narrative of the journeyings of the Israelites from the time of their leaving Sinai to their arrival at the plains of Moab, and portions of the Mosaic Law. Formerly the authorship was implicitly attributed to Moses, but some modern scholars resolve the book into various parts, to each of which is assigned a separate author. See *Pentateuch*.

Numeral (nū′mėr-al), a figure or character used to express a number; as the Arabic numerals, 1, 2, 3, etc., or the Roman numerals, I, V, X, L, C, D, M, etc. See *Arithmetic*.

Numeration (n ū - m ė r - ā′shun), the art of expressing in characters any number proposed in words, or of expressing in words any number proposed in characters. The chief terms used for this purpose are the names of the digits from *one* to *ten*, a *hundred*, a *thousand*, a *million*, etc. The term *billion* is of uncertain use; in Britain it is a mil-

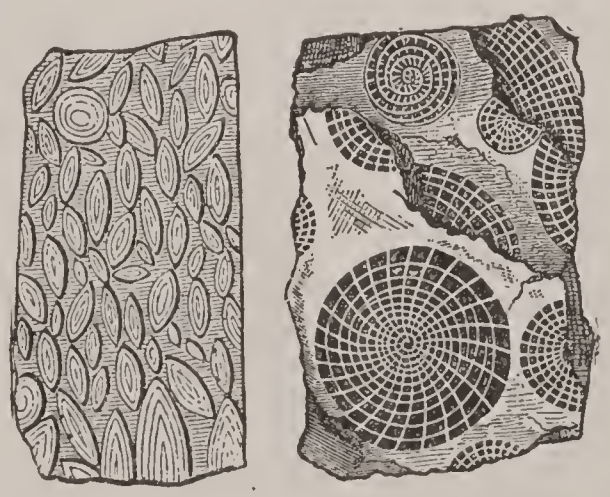
lion of millions; in France, America, etc., a thousand millions.

Numidia (nū-mid'i-à), an ancient country of North Africa, corresponding roughly with modern Algeria. It was divided among various tribes, but after the second Punic war it was united under Massinissa, and several of its rulers became noted in Roman history. In B.C. 46 it became a Roman province.

Numidian Crane. See *Demoiselle.*

Numismatics (nū-mis-mat'ikz), or NUMASMATOLOGY, the science of coins and medals, the study of which forms a valuable and important adjunct to that of history. The word *coin* is in modern times applied to those pieces of metal struck for the purpose of circulation as money; while the word *medal* signifies pieces of metal similar to coins not intended for circulation as money, but struck and distributed in commemoration of some person or event. Ancient coins, however, are often termed *medals*. They are of gold, silver, bronze, electrum, or billon, and in ancient times served not only for the purpose of a currency, but as chronicles of political events, and abstracts of the times. It is also from coins alone that we derive our knowledge of some of the most celebrated works of ancient art, particularly of ancient statuary. The parts of a coin or medal are: the *obverse* or *face* containing generally the head, bust, or figure of the sovereign or person in whose honor the medal was struck, or some emblematic figure relating to him; and the *reverse*, containing various figures or words. The words around the border form the *legend*, those in the middle or field the *inscription*. The lower part of the coin, separated by a line from the figures or the inscription, is the *basis* or *exergue*, and contains the date, the place where the coin was struck, etc. Coins are usually arranged in three grand classes: Greek and Roman coins, mediæval and modern European coins, and Oriental coins. Greek coins are again classed in three divisions: (1) civic coins, and regal without portraits; (2) regal coins bearing portraits; (3) Græco-Roman coins. Roman coins are divided into (1) republican, (2) imperial. In ancient, as in modern times, while the coins of empires or kingdoms were (at least in later times) distinguished by the head of the reigning prince, those of free states were distinguished by some symbol. Thus, Egypt was distinguished by a sistrum, an ibis, a crocodile, or a hippopotamus; Arabia by a camel; Africa by an elephant; Athens by an owl; Syracuse and Corinth by a winged horse. There were also a number of symbols having a general signification. Thus, a patera signified a libation, and indicated the divine character of the person holding it in his hand; the shaft of a spear denoted sovereign power; an ensign on an altar, a new Roman colony; and so forth. Mediæval coins include the Byzantine, the coins of the various European states from the fall of Rome to the accession of Charlemagne; the Carlovingian currency from Charlemagne to the fall of the Swabian house (1268); early Renaissance to 1450; and classical Renaissance from then till 1600. Modern coins are classed geographically and chronologically. Oriental coins are those of Ancient Persia, Arabia, Modern Persia, India, China, etc.

Nummulite (num'ū-līt; Latin, *nummus*, money; Greek, *lithos*, stone), a name common to the members of an extensive class of fossil polythalamous foraminifera, having externally somewhat the appearance of a piece of money (hence their name), without any apparent opening, and internally a spiral cavity divided by partitions into numerous chambers communicating with each other by means of small openings. They vary in size from less than ⅛ inch to 1½ inch or more in diameter. Nummulites occupy an important place in geology, on account of the prodigious extent to which they are accumulated in the lower tertiary (Eocene) strata. They are often piled on each other nearly in as close contact as the grains in a heap of corn. They occur so abundantly in some parts of the Eocene formation that the name of *nummulitic* limestone is given to



Nummulites.

the strata so characterized. This series is characteristic of the Eastern Hemisphere, often attains a thickness of several thousand feet, and extends from the western shores of Europe and Africa through Asia to the east of China. The pyramids of Egypt are constructed of a stone largely composed of nummulites.

Nun, a word of unknown origin, but supposed to be connected with a Coptic word signifying 'pure,' applied in the Roman Catholic Church to a female who retires from the world, joins a religious sisterhood, takes upon herself the vow of chastity and the other vows required by the discipline of her convent, and consecrates herself to a life of religious devotion. Nearly all the masculine orders or rules had corresponding feminine institutions, while there were also numerous independent orders of nuns. At present the number of nuns is largely in excess of that of monks. The first nunnery is said to have been that founded by a sister of St. Anthony about A.D. 270; and the first in England was founded at Folkestone by Eadbald, king of Kent, in 630.

Nun, one of the mouths of the river Niger.

Nunc Dimittis ('now thou lettest depart'), the first two words of the Latin version of the canticle of Simeon given in Luke ii. 29-32, and used as the designation of the whole canticle, which forms part of the evening service in the Book of Common Prayer.

Nuncio (nun'shi-ō), an ambassador of the first rank (not a cardinal) representing the pope at the court of a sovereign entitled to that distinction. A papal ambassador of the first rank, who is at the same time a cardinal, is called a legate. The title of *internuncio* is given to an ambassador of inferior rank, who represents the pope at minor courts. Formerly the papal nuncios exercised the supreme spiritual jurisdiction in their respective districts. But now, in those Catholic kingdoms and states which hold themselves independent of the court of Rome in matters of discipline, the nuncio is simply an ambassador.

Nuncupative Will, one made by the verbal declaration of the testator, and depending merely on oral testimony for proof though afterwards reduced to writing. Nuncupative wills are now abolished, but with a proviso that any soldier in actual military service, or any mariner or seaman at sea, may dispose of his personal estate by an oral testament before a sufficient number of witnesses.

Nuneaton (nun'ē-tun), a town in England, in the county of Warwick, on the left bank of the Anker, 17 miles N. N. E. of the town of Warwick. It has two endowed schools, and the industries include woven worsted goods, wool and skin dressing, iron working, toolmaking, etc. The ribbon manufacture, formerly important, has declined. Coal and iron are found in the vicinity. Pop. 37,083.

Nunez de Balboa. See *Balboa.*

Nuphar (nū'fär), the generic name of the yellow water-lilies, nat. order Nymphæaceæ.

Nuraghi (nu̱-rä'gē), the name given to certain ancient structures peculiar to Sardinia, resembling in some respects the 'burghs' or 'brochs' (which see) found in some of the northern parts of Scotland. They are conical structures with truncated summits, 30 to 60 feet high and 35 to 100 feet diameter at the base, built of unhewn blocks of stone without mortar. They generally contain two or three conically vaulted chambers one above the other, connected by a spiral staircase in the thickness of the wall, and are built either on natural or artificial eminences. Their purpose is not known, but they are probably prehistoric monumental tombs.

Nureddin. See *Noureddin.*

Nuremberg (nū'rem-berg; Ger. *Nürnberg*, nürn'berh), a town in Bavaria, 93 miles N. N. W. of Munich. It is surrounded by well-preserved ancient walls having numerous massive towers and gateways, and the whole inclosed by a dry moat. The walls have of late been breached in several places to afford access from the extensive and rapidly increasing suburbs. Within the walls it is one of the best preserved specimens of a mediæval town in existence. The houses are generally lofty and picturesque, and many of them have three ranges of dormer windows on their steep roofs. The town, which is very densely bu'lt, rises gradually to a height on the north side, on which the old castle is situated. The Pegnitz, traversing the town from east to west, divides it into two nearly equal parts—the north and the south, which communicate by numerous bridges. It contains a large ma-ketplace and several interesting churches, among the finest of which are the Gothic churches of St. Lawrence and St. Sebaldus, both dating from the thirteenth century. The former among its treasures of art contains an elaborate and delicately carved ciborium

of stone in the form of a Gothic spire 65 feet high by Adam Krafft; the latter, St. Sebald's monument, the masterpiece of Peter Vischer, consisting of a rich late Gothic altar shrine and canopy in bronze adorned with numerous statues and reliefs. Other places of worship are the fourteenth century Marienkirche (Roman Catholic), and the Jewish synagogue in

Nuremberg—The Pegnitz and St. Lawrence Church.

oriental style (1867-74). The castle dates from the reign of Frederick Barbarossa (1158); part of the interior was fitted up in Gothic style (1854-56) as a royal residence. The town hall is adorned with frescoes by Albert Dürer, and a relief in stucco by Kern. The Germanic National Museum, founded in 1852 in a suppressed Carthusian monastery, a Gothic building of the fourteenth century with extensive cloisters, and recently greatly extended by the addition of the Augustinian monastery rebuilt adjoining, now ranks among the first in Germany, and is exceedingly rich in works illustrative of the arts and industries of the middle ages. It has also a library and a collection of charters. There are several fountains, the chief of which is the Schöne Brunnen, erected in 1385-96, and restored 1821-24. It is in the form of a graceful Gothic cross 63 feet in height, adorned with numerous figures; and modern statues of Dürer, Hans Sachs, Melanchthon, and other worthies. Nuremberg has extensive breweries, railway-carriage and lead-pencil manufactories, and produces fancy articles in metal, carved wood, ivory, etc., chemicals, clocks and watches, cigars, playing-cards, etc. It has long been noted for its small wares, known in trade as 'Nuremberg wares,' such as toys, and small gold, silver and ivory articles, etc., which are sent to all parts of the world. Printing and bookbinding are also extensively carried on, and the hop market is the most important on the Continent. The town is celebrated, in connection with its industry, for the invention of watches. It was an independent town down to 1806, when it became a Bavarian city it has prospered first of the imperial towns to cast its lot for the Reformation. During the Thirty Years' war about 10,000 of the inhabitants perished, while Gustavus Adolphus was besieged here by Wallenstein (1632). Before the discovery of the sea passage to India, Nuremberg was the great mart of the produce of the East coming from Italy and going to the North. Several causes led to a decline; but since it became a Bavarian city it has prospered greatly, and is now the most important seat of trade and manufactures in South Germany. Pop. (1910) 332,651, three-fourths being Protestants.

Nurse, one who tends or takes care of the young, sick, or infirm; spe-

cifically a woman hospital attendant. There are now numerous institutions where active, intelligent, and physically able women are thoroughly trained for this work. The system of sending trained nurses to a seat of war originated with Miss Florence Nightingale during the Crimean war, and organizations for military nursing during war are now common to all civilized countries. See *Red Cross Societies.*

Nursery (nur'se-ri), a place where vegetables, flowering plants, and trees are raised from seed in order to be sold in their young state either for use as food or for transplantation. The advantage of having separate places devoted to this purpose consists in this, that more attention can in that case be given to the objects of culture at the time when particular care is required by them. In the case of trees there is another great advantage in the fact that they can be selected from the nursery at a stage of their growth at which it can be pretty satisfactorily determined that they are likely to thrive. Nurseries are parceled out into several plots according to the different kinds of plants or trees to be raised. One part is assigned to the ordinary culinary vegetables; others to flowering plants requiring different kinds of soil; another to forest trees with caducous leaves; another to ornamental trees and shrubs with caducous leaves; another to trees and shrubs with persistent leaves; and another to fruit trees. For the propagation of many exotic and other trees and plants a large extent of ground in a well appointed nursery is under glass. Sometimes also different parts of the nursery are allotted to the various operations, such as budding and grafting, by which trees are propagated.

Nursingpore. See *Narsinghpur.*

Nusseerabad. See *Nasirabad.*

Nut, in botany, a one-celled fruit containing when mature only one seed, and enveloped by a pericarp of a hard, woody, or leathery texture, rarely opening spontaneously when ripe. Among the best known and most valuable nuts are the hazel-nut, Brazil-nut, walnut, chestnut, hickory, pecan and cocoanut, all of which are edible. Various other kinds of nuts are used for special purposes. Thus valonia-nuts, gall-nuts (not, strictly speaking, nuts—see *Galls*), and myrobalan-nuts are used in tanning and dyeing, the last two also in ink-making; betel-nuts in making tooth-powder and tooth-paste; and coquilla-nuts and vegetable-ivory (the kernel of the nut of the Peruvian palm), being very hard and capable of taking on a fine polish, are used in making small ornamental articles of turnery.

Nutation (nū-tā'shun), in astronomy, a small subordinate gratory movement of the earth's axis, in virtue of which, if it subsisted alone, the pole would describe among the stars, in a period of about nineteen years, a minute ellipse, having its longer axis directed towards the pole of the ecliptic, and the shorter, of course, at right angles to it. The consequence of this real motion of the pole is an apparent approach and recess of all the stars in the heavens to the pole in the same period; and the same cause will give rise to a small alternate advance and recess of the equinoctial points, by which, in the same period, both the longitudes and right ascensions of the stars will be also alternately increased or diminished. This nutation, however, is combined with another motion, viz., the precession of the equinoxes, and in virtue of the two motions the path which the pole describes is neither an ellipse nor a circle, but a gently undulating ring; and these undulations constitute each of them a nutation of the earth's axis. Both these motions and their combined effect arise from the same physical cause, viz., the action of the sun and moon upon the earth. See *Precession.*

Nutcracker (nut'kra-ker), the name of an insessorial bird which is generally referred to the crow family, and so placed as to approximate either to the woodpeckers or starlings. The *Nucifrăga caryocatactes*, or European nutcracker, is about the size of the jackdaw, but with a longer tail. It combines to a considerable extent the habits of the woodpeckers and those of the omnivorous birds. It has received the name of nutcracker from its feeding upon nuts. The *N. columbiana*, noted for the diversified beauty of its plumage, frequents rivers and sea shores in America.

Nutgalls. See *Galls.*

Nuthatch (nut'hach), the common name of birds of the genus *Sitta.* The common European nuthatch (*S. europæa*) is a scansorial bird, of shy and solitary habits, frequenting woods and feeding on insects chiefly. It also eats the kernel of the hazel-nut, breaking the shell with great dexterity. The white-bellied nuthatch of North America (*Sitta Carolinensis*) is 6 in. long; the wings 4.

These birds are found in all cold and

temperate climates, the North American species (*S. carolinensis*) being known as the white-bellied nuthatch, its color being bluish above, the under parts bluish white.

Nutley, a town in Essex County, New Jersey, 5 miles N. of Newark. Paper, plush, leather goods, etc., are made. Pop. 6009.

Nutmeg (nut'meg), the kernel of the fruit of *Myristica moschata* or *fragrans*. This fruit is a nearly spherical drupe of the size and somewhat of the shape of a small pear. The fleshy part is of a yellowish color without, almost white within, and 4 or 5 lines in thickness, and opens into two nearly

Nutmeg (*Myristica moschata*).

equal longitudinal valves, presenting to view the nut surrounded by its arillus, well known as *mace*. The nut is oval, the shell very hard and dark-brown. This immediately envelops the kernel, which is the nutmeg commonly sold in the shops. The tree producing this fruit grows principally in the islands of Banda in the East Indies, and has been introduced into Sumatra, India, Brazil and the West Indies. It reaches the height of 20 or 30 feet, producing numerous branches. The color of the bark of the trunk is a reddish-brown; that of the young branches a bright green. The nutmeg is an aromatic, stimulating in its nature, and possessing narcotic properties, very grateful to the taste and smell, and much used in cookery. Nutmegs yield by distillation with water about 6 per cent. of a transparent oil, which has a burning aromatic taste.

Nutria (nū'tri-â), the commercial name for the skins of *Myapotămus coypus*, the coypou of South America. The overhair is coarse; the fur, which is used chiefly for hat-making, is soft, fine, and of a brownish-ash color.

Nutrition (nū-trish'un), the act or process by which organisms, whether vegetable or animal, are able to absorb into their system their proper food, thus promoting their growth or repairing the waste of their tissues. It is the function by which the nutritive matter already elaborated by the various organic actions loses its own nature, and assumes that of the different living tissues—a process by which the various parts of an organism either increase in size from additions made to already formed parts, or by which the various parts are maintained in the same general conditions of form, size, and composition which they have already by development and growth attained. It involves and comprehends all those acts and processes which are devoted to the repair of bodily waste, and to the maintenance of the growth and vigor of all living tissues.

Nux-vomica (nuks-vom'i-kâ), the fruit of a species of *Strychnos* (*S. nux-vomica*), order Loganiaceæ, growing in various places in the East Indies. It is about the size and shape of a small orange, and has a very bitter acrid taste. It is known as a very virulent poison, and is remarkable for containing the veg e t o-alkali *strychnia*. See *Strychnine*.

Strychnos nux-vomica.

Nyam-Nyam. See *Niam Niam*.

Nyan'za. See *Albert Nyanza* and *Victoria Nyanza*.

Nyassa (nē-äs'sâ), a large lake in Southeastern Africa, out of which flows the Shiré, a northern tributary of the Zambesi; discovered by Livingstone in 1859. The length of the lake is above 300 miles, and it varies in breadth from about 15 to more than 50 miles. The surface is 1522 feet above the sea level; its waters are sweet and abound in fish. There are missionary stations (see *Livingstonia, Blantyre*) and trading stations in this region, and a road has been constructed between Nyassa and Tanganyika. The region adjoining it on the N. W. and S. W. formerly known as Nyassaland, formed the nucleus of the British Central Africa Protectorate, organized in 1891.

Nyaya (nī'â-yâ), a system of Indian philosophy said to have been

propounded by a sage named Gautama (not the founder of Buddhism). He lived at the commencement of the second of the four ages into which the Hindus divide the whole duration of the world's existence, and his life is represented as lasting 1000 years. His philosophy inquires into the way to attain perfect beatitude, or the final deliverance of the soul from re-birth or transmigration.

Nyborg (nü'bor*h*), a seaport in Denmark, on the east side of the island of Fụnen, 17 miles E. S. E. of Odensee. It was fortified until 1869. Pop. 7790.

Nyctaginaceæ (n i k - ta-ji-nā'se-ē), NYCTAGIN'EÆ, a nat. order of plants inhabiting the warmer parts of the world, typical genera of which are the *Mirabilis* or marvel of Peru (see *Mirabilis*), *Abronia*, and *Pisonia*. The roots of many of the species are fleshy, purgative and emetic.

Nycticebus (nik-ti-sē'bus), the generic name of the kukang or slow-paced loris, the typical animal of the subfamily Nycticebidæ.

Nyctipithecus (nik-ti-pi-thē'kus), a genus of American monkeys which appear to represent the lemur tribe in America. Their habits are nocturnal and their movements cat-like.

Nye (nī), EDGAR WILLIAM, humorist, born at Shirley, Maine, in 1850; died in 1896. He wrote under the name of Bill Nye, bad spelling being combined with a racy humor in his productions.

Nyiregyháza (n y ē' r e d - yü-zâ), a town of Hungary, 30 miles N. of Debreczin. It has mineral springs and salt, soda and saltpeter manufactories. Pop. 31,875.

Nyköping (nü-cheup'ing), a seaport town in Sweden, capital of Södermanlän, and at the mouth of the river Nyköping, on the Baltic, 54 miles S. W. of Stockholm. It has shipbuilding and several minor industries. Pop. 7375.

Nylghau (nil'gạ), the *Portax picta* or *tragocamēlus*, a species of antelope as large as or larger than a stag, inhabiting the forests of Northern India, Persia, etc. The horns are short and bent forward; there is a beard under the middle of the neck; the hair is grayish-blue. The female has no horns. The nylghau is much hunted as one of the noblest beasts of the chase, the skin of the bull being in demand for the manufacture of native shields. The name nylghau literally means 'blue ox,' and has, doubtless, been applied to this animal from the ox-like proportions of its body. They are known to breed freely in confinement.

Nymegen. See *Nijmegen*.

Nymph, (nimf), a term sometimes applied to denote the *pupa* or *chrysalis* stage in the metamorphosis of insects and other animals.

Nymphæaceæ (nim-fē-ā'se-ē), a nat. order of aquatic plants containing the water lilies of various parts of the world. They are polypetalous hypogenous exogens, with the sides of the cells of the fruit covered with numerous seeds. The leaves are peltate or cordate and fleshy. The Victoria Regia is called water maize in South America. The species are mostly prized for the beauty of their flowers; as the

Nymphæa Lotus (white Egyptian water-lily).

Nymphæa alba, or white water lily, which grows in pools, lakes and slow rivers in Britain; the *N. cærulea*, or blue lotus of the Nile, often cultivated in gardens; the *N. Lotus*, or white lotus of the Nile; the *Nuphar lutča*, or yellow water lily; and the *Victoria Regia*.

Nymphs, in mythology, a numerous class of inferior divinities, imagined as beautiful maidens, not immortal, but always young, who were considered as tutelary spirits not only of certain localities, but also of certain races and families. They occur generally in connection with some other divinity of higher rank, and they were believed to be possessed of the gift of prophecy and of poetical inspiration. Those who presided over streams were called *Naiads;* those over mountains, *Oreads;* those over woods and trees, *Dryads*, and *Hamadryads;* those over the sea, *Nereids*.

Nynee Tal (nī'nē-tal), a town of British India in the United Provinces. Pop. 7609.

Nystad (nü'stad), a town and seaport in Finland, 36 miles N. W. of Abo, on the Gulf of Bothnia. A peace was concluded here between Russia and Sweden in 1721. Pop. 4044.

O

O, the fifteenth letter and the fourth vowel in the English alphabet. In English O represents six or seven sounds and shades of sound: (1) as in *note, go,* etc. (2) The similar short sound as in *tobacco.* (3) The sound heard in *not, gone.* (4) The same sound lengthened as in *mortal.* (5) The sound in *move, do, tomb, prove.* (6) The same sound but shorter as in *wolf, woman.* (7) The sound of *u* in *tub,* as in *come, done, love.* It is also a common element in digraphs, as *oo, oa, ou.*

O', in Irish proper names, a patronymic prefix corresponding to the Mac of the Highlands of Scotland; thus O'Connell means 'the son of Connell.'

Oahu (ō-ä'hö), one of the Sandwich Islands (which see). Pop. 58,504.

Oajaca, or OAXACA (ō-å-*h*ä'kå), a State of Mexico, on the Pacific Ocean and the Gulf of Tehuantepec; area, 35,582 square miles. It is of uneven surface, and in many parts mountainous; but is one of the most beautiful and best-cultivated districts in Mexico. Among the minerals are gold, silver, copper, quicksilver, iron, etc. Wheat, maize, indigo, cochineal, cotton, sugar, cocoa, coffee, and many fruits are produced. The only port is Huatulco. The inhabitants are chiefly Indians. Pop. 948,633.—The capital, which has the same name, stands near the river Verde, 218 miles S. S. E. of Mexico, 4800 feet above the sea. It is well built, about 2 miles in length by 1¼ miles in breadth, including the suburbs, which are full of gardens and plantations of cochineal. The inhabitants are industrious, manufacturing silk, cotton, sugar and chocolate. Pop. 35,049.

Oak (ōk), the general name of the trees and shrubs belonging to the genus *Quercus,* nat. order Cupuliferæ, having monœcious flowers, those of the males forming pendulous catkins, those of the females solitary or in clusters, and having an involucre which forms the well-known 'cup' of the fruit—the acorn. The oak from the remotest antiquity has obtained a preëminence among trees, and has not unjustly been styled the 'monarch of the woods.' In the traditions of Europe and a great part of Asia the oak appears as a most important element in religious and civil ceremonies. It was held sacred by the Greeks and Romans, and no less so by the ancient Gauls and Britons. The species of oak are very numerous, generally natives of the more temperate parts of the northern hemisphere, but found also in Java, Mexico and South America. They have alternate simple leaves, which are entire in some, but in the greater number variously lobed and sinuated or cut; evergreen in some, but more generally deciduous. The British oak (*Q. Robur*) is found in two forms or varieties, by some regarded as distinct species—*Q. sessiliflōra* and *Q. pedunculāta;* the wood of the former is heaviest and toughest, that of the latter being in favor with cabinet makers for ornamental work. (See also *Durmast.*) For more than a thousand years British ships were mainly built of common oak (*Q. Robur*). The common oak attains a height of from 50 to 100 or even 150 feet, with a diameter of trunk of from 4 to 8 feet. Noble specimens of oak trees, and some of them historically celebrated, exist in almost all parts of Britain. On the settlement of the United States oaks were found to be still more numerous there in species than in Europe, most of them yielding valuable timber. The white oak (*Q. alba*), extending from the Gulf States to Canada, is inferior in quality only to the British oak, and other species of value are the over-cup oak of the Southern States (*Q. lyrata*); the live-oak (*Q. virens*), also southern; the red-oak (*Q. rubra*), widely distributed, the black oak (*Q. nigra*); and others of less value. The dwarf chestnut oak (*Q. primoides*) and several others produce edible acorns. The oak subserves a great number of useful purposes, the wood being hard, tough, tolerably flexible, strong without being too heavy, not readily penetrated by water. Among the other chief species are the dyer's oak (*Q. tinctoria*), the bark of which is used for tanning and dyeing leather; the cork oak (*Q. Suber*), live oak (*Q. virens*), the Turkey oak (*Q. Cerris*) furnishing a

valuable timber; the valonia oak (*Q. ægilops*) whose acorn-cups are largely used in tanning; the kermes oak (*Q. coccifĕra*), the edible oak (*Q. æscŭlus*), yielding edible acorns; evergreen oak (*Q. Ilex*). The bark of the common oak tree and of several others is preferred to all other substances for the purpose of tanning, on account of the amount of tannic and gallic acid it contains. Oak galls, morbid growths caused by insects (see *Galls*), are also much used in tanning, especially those of *Q. infectoria*. Oak bark is also used medicinally as an astringent. The name oak is sometimes popularly applied to timber of very different genera of trees; thus African teak is often called *African oak;* while in Australia the term oak is applied to some species of *Casuarīna*. What is known as *green oak* is a condition of oak-wood caused by its being colored with the spawn of *Pezīza æruginōsa*, a species of fungus.

Oak-beauty, the popular name of a British moth (*Biston prodromaria*), whose caterpillar feeds on the oak.

Oakham (ō′kam), or OKEHAM, the county town of Rutland, England, situated in the Vale of Catmos, 85 miles N. N. W. of London. It has a fine old church, a free grammar school, and an old castle. Pop. 3668.

Oakland (ōk′land), a city of California, capital of Alameda County, on the east side of San Francisco Bay, opposite San Francisco, of which it may be considered a suburb, it being a favorite place of residence for San Francisco merchants. It has a good harbor, and many manufactures, including extensive ironworks, smelting and metallurgical works, canneries, tanneries, etc. It has the Oakland College of Medicine and Surgery, and in Berkeley, a suburb, the University of California. Pop. 150,174.

Oak-leaf Roller (*Tortrix viridāna*), a small moth which is very destructive to trees and takes its name from the fact that the larvæ roll themselves up in the oak leaves, which give them both food and shelter. The front wings are green, but the chief color is brown.

Oak-leather, a kind of fungous spawn found in old oaks running down the fissures, and when removed not unlike white kid leather. It is very common in America, where it is sometimes used for spreading plasters on.

Oak Park, a city of Cook County, Illinois, 8½ miles W. of Chicago, of which it is a suburb. It has many fine residences and various manufactures. Pop. 19,444.

Oakum (ō′kum), the substance of old tarred or untarred ropes untwisted and pulled into loose fibers; used for caulking the seams of ships, stopping leaks, etc. That formed from untarred ropes is called white oakum.

Oamaru (ō-ä′ma-rö), a seaport of New Zealand, on the east coast of Otago, the second town of the provincial district next to Dunedin, with which it is connected by railway. It is a handsome town built of pure white limestone, has a safe and commodious harbor, and exports large quantities of cereals and other agricultural produce. It has grain-mills, a woolen factory, etc. Pop. 5071.

Oannes (o-an′nes), the Babylonian sea-god. He is described as having the head and body of a fish, to which were added a human head and feet. In the daytime he lived with men to instruct them in the arts and sciences, but at night retired to the ocean.

Oar (ōr), a long piece of timber flat at one end and round at the other, used to propel a boat, barge, or galley through the water. The flat part, which is dipped into the water, is called the *blade;* the other end is the *handle;* and the part between the two is called the *loom*. Oars are frequently used for steering, as in whale-boats. *Sweeps* are large oars used in small vessels sometimes to assist the rudder, but usually to assist the motion of the ship in a calm. A *scull* is a short oar of a length such that one man can manage two, there being one on each side, or a single oar used in propelling a boat, it being placed over the stern.

Oar-fish (*Regalĕeus Banksii*), one of the ribbon-fishes, a peculiar deep sea fish, 12 to 20 feet or more in length, but having a narrow and extremely compressed body. It is of a silvery color, and is only rarely met with, usually in a dying condition.

Oasis (ō-ā′sis), originally the name of the fertile spots in the Libyan Desert where there is a spring or well and more or less vegetation, but now applied to any fertile tract in the midst of a waste, and often used figuratively. The oases of Northern Africa are generally river valleys, the waters of which are for the most part underground, or depressions surrounded by short ranges of hills, from which small brooks descend, sometimes forming a lake in the center. In recent times oases have been formed in the Northern Sahara by sinking artesian wells. There are many important oases in the Western Sahara, in the Libyan Desert, in Arabia, Persia, and

in the Desert of Gobi in Central Asia. In ancient times the most celebrated oasis was that to the west of Egypt, containing the temple of Jupiter Ammon, now called the Oasis of Siwah. See *Egypt, Sahara.*

Oat (ōt), or Oats (*Avēna*), a genus of edible grasses cultivated extensively in all temperate climates, and though principally grown as food for horses largely used when ground into meal as human food. There are about sixty species, the principal of which are *A. satīva* (the common oat), *A. nuda* (naked oat, pilcorn, or peelcorn), *A. orientālis* (Tartarian or Hungarian oat), *A. brevis* (short oat), *A. strigōsa* (bristle-pointed oat), *A. chinensis* (Chinese oat), etc. The cultivated species of oats are subdivided into a large number of varieties, which are distinguished from each other by color, size, form of seeds, quality of straw, period of ripening, adaptation to particular soils and climates, and other characteristics. The yield of oats varies from 20 bushels to 80 bushels per acre according to soil, etc. The weight per bushel varies from 35 to 45 lbs., and the meal product is about half the weight of the oats. Oatmeal is a cheap and valuable article of food, and its value seems to be becoming more appreciated among the wealthier classes as it is being neglected by the poorer. The wild oat (*A. fatua*) is supposed to be the original of all the species, but its native country is unknown.

Oates (ōts), Titus, son of a ribbon weaver, born in London about 1620; died in 1705. He took orders in the Church of England, and held benefices in Kent and Sussex; became afterwards chaplain in the navy and was discharged for misconduct; turned Roman Catholic, and resided for some time at the Jesuit College of Valladolid and St. Omar, but was finally, in 1678, dismissed for repeated misdemeanors. Flung into the world as a mere adventurer, he returned to England and concocted the story of the famous 'Popish Plot' (which see). Various events gave color to the accusation, and in the public excitement created by the story several eminent Catholics were executed, while Titus Oates was lodged handsomely in Whitehall, and received a pension of £900 from parliament. The effects of this perjury continued for two years until, after the execution of Strafford, there was a revulsion of public opinion. He was afterwards convicted of perjury, sentenced to be pilloried five times a year, whipped from Aldgate to Newgate, and imprisoned for life. On the accession of William and Mary he was liberated, and lived to a good old age, enjoying an ill-deserved pension of £300 a year.

Oath (ōth), a solemn assertion or promise, with the invocation of God to be a witness of the truth of what we say. Various forms have been associated with oath-taking. Thus, men have proclaimed and symbolized their promise by chopping a fowl in two, by standing within a circle of rope, by placing the hand under another's thigh, by dipping weapons into or drinking blood, or by stretching the hands upwards towards the sky, and this latter gesture has established itself throughout Europe. Among the early Christians the question of oath-taking was a matter of much controversy, objection to it being founded upon Christ's command of 'Swear not at all' (Matt. v, 34); but this injunction was held by Athanasius and others only to prohibit colloquial as distinct from judicial swearing. This objection is still maintained, however, by Mennonites, Quakers, Anabaptists; and the Secularists in England, upon other grounds, refuse the judicial oaths. Oaths to perform illegal acts do not bind, nor do they excuse the performance of the act. In civil law, oaths are chiefly divided into two classes—assertory or affirmative oaths (*juramenta assertoria*), establishing the certainty of a present or past event, and promissory oaths (*juramenta promissoria*), which refer to a future event, a promise to execute some contract or undertaking. The laws of all civilized countries require the security of an oath for evidence given in a court of justice, and on other occasions of high importance. Any person called as a witness, or required or desiring to make an affidavit or deposition, who shall, from conscientious motives, refuse to be sworn, may obtain from the court, on its being satisfied of the sincerity of the objection, permission to make a solemn affirmation or declaration instead. See *Affirmation, Perjury.*

Oaxaca. See *Oajaca.*

Ob. See *Obe.*

Obadiah (ob-a-dī'a), one of the twelve minor prophets, who foretells the speedy ruin of the Edomites. The prophecy was probably uttered during the period which elapsed between the fall of Jerusalem (586 B.C.) and the conquest of Edom by Nebuchadnezzar (583 B.C.).

Oban (ō'ban), a seaport of Scotland, county of Argyle, situated on a large protected bay 92 miles from Glasgow and 493 miles from London by rail.

It is the terminus of a railway, the starting place for steamer routes, and the headquarters of tourists to the Western Highlands. Pop. 5374.

Obbliga'to. See *Obligato.*

Obdorsk (ob-dorsk'), a fishing town in Asiatic Russia, near the mouth of the Obe; the projected terminus of a railway across the northern part of the Urals to the Arctic Ocean.

O'be, O'BI, or OB, a river of Siberia, which, rising in the Altai Mountains, pursues a very circuitous course northwest to Samarova, and there dividing, flows north in a double channel to the Gulf of Obe. Its chief tributaries are the Irtish, Tobol, Tom and Tchulim. Its course is estimated at 2000 miles.

Obeah (ō-bē'a), or OBI, a species of witchcraft practiced among negroes of the West Indies. The practicer of this form of degraded superstition is called an Obeah-man or -woman, and possesses great influence.

Obeid (o-bīd'), EL, an African town, the capital of Kordofan, 220 miles southwest of Khartoom. The inhabitants carry on a large trade in gum, ivory, gold, etc. It was for a time a Mahdist stronghold with a population of about 30,000. It has now hardly 7000.

Obelisk (ob'el-isk), a column of a rectangular form, diminishing towards the top, generally terminating in a low pyramid. The proportion of the thickness to the height is nearly the same in all obelisks, that is, between one-ninth and one-tenth; and the thickness at the top is never less than half, nor greater than three-fourths of the thickness at the bottom. Egypt abounded with obelisks, which were always of a single block of hard stone; and many have been removed thence to Rome and other places. They seem to have been erected to record the honors or triumphs of the monarchs. The two largest obelisks were erected by Sesostris in Heliopolis; the height of these was 180 feet. They were removed to Rome by Augustus. A fine obelisk from Luxor was erected in Paris in 1833, and the two known as Cleopatra's Needles are now in London and New York. (See *Cleopatra's Needles.*) Besides those of Egypt, monoliths of this appearance, but smaller in size, have been found in the ruined cities of Nineveh and Nimrūd. The obelisks which were common to Rome, Florence, etc., had all been removed from Egypt during its domination by the Roman emperors.

Obelus (ob'e-lus), a mark, usually of this form — —, or this ÷, in ancient MSS. or old editions of the classics, and indicating a suspected passage or reading.

Ober (ō'bėr), FREDERICK ALBION, author, was born at Beverly, Massachusetts, in 1849. He traveled extensively in Florida, the West Indies, Mexico, Spain, Africa and South America, and wrote *Camps in the Caribees, Young Folks' History of Mexico, Puerto Rico and Its Resources, The Silver City, Montĕzuma's Gold Mines,* a *Guide to the West Indies, Heroes of American History,* and many other works.

Oberammergau (ō-ber-äm'er-gö), a village in Upper Bavaria, celebrated for the performance, every ten years, of the passion-play of Christ's crucifixion and ascension. The performance takes place every Sunday during the summer, on a large wooden stage open to the sky, and it usually lasts eight hours. Primarily regarded by these Bavarian villagers as a religious exercise, it has become in their performances a mystery play of impressive beauty. Latterly, however, it has taken the character of a European amusement and a source of profit.

Oberhausen (ō'bėr-hou-zn), a town of Prussia, in the Rhine province, 51 miles east of the Rhine and 20 north of Düsseldorf, now an important center of the iron industry, having also coal mines, chemical works, porcelain and glass works, etc. Pop. 52,096.

Oberlahnstein (ō-bėr-län'stīn), a town of Prussia, district of Wiesbaden, at the junction of the Lahn with the Rhine, an interesting old place with well-preserved walls, towers, etc. Pop. 8472.

Oberlin (ō'ber-lin), JOHANN FRIEDRICH, Lutheran minister, born at Strasburg in 1740; died in 1826. He became pastor of Waldbach in the Steinthal (Ban de la Roche) district of Alsace in 1767, and set about ameliorating the wretchedness of the district and the people. Despite opposition he gradually effected a wonderful improvement in the morals, industry and thrift of the community. Besides agriculture, Oberlin introduced straw plaiting, spinning and weaving into the community, so that the village of a few hundreds became a town with 5000 inhabitants, and a model to great numbers of philanthropists.

Oberlin College, an educational institution for both sexes at Oberlin, Ohio, comprising a preparatory department, a woman's department, a department of arts and philosophy, and a theological department. The attendance averages over 2000; the endowment is nearly $2,000,000.

Oberon (ō'ber-on), in popular mythology, a king of the elves or fairies, and husband of Titania. He appears first in the old French poem *Huon de Bordeaux*, but is best known from Shakespeare and from Weber's opera of *Oberon*.

Oberstein (ō'ber-stīn), an old town of Western Germany in the principality of Birkenfeld, 28 miles southwest from the Rhine at Bingen, picturesquely situated on the Nahe. Cutting and polishing of agates is a specialty of the place. Pop. 9669.

Obesity. See *Corpulence.*

Obiter dictum (L.), a saying by the way, and applied specifically in law to the casual opinion of a judge in contradistinction to a *judicial dictum.*

Object (ob'jekt), in philosophy, the correlative of subject, a term used to represent the distinction between the mind, or agent, or conscious being, or whatsoever it is conceived to be that thinks (the subject), and that, whatsoever it is, that is thought of (the object). The terms subject and object were first introduced in their modern relation in scholastic philosophy, and the distinction between them was at first merely logical. *Object*, in grammar, is the word or member of a sentence or clause expressing that on which the action expressed by a transitive verb in the sentence or clause is exercised, or the word or member governed by a preposition, the word being thus put in the *objective case.*

Object-glass, in a telescope or microscope, the lens which first receives the rays of light coming directly from the object, and collects them into a focus. In the finest refracting telescopes the object-glass consists of an achromatic combination of lenses, formed of substances having different dispersive powers, and of such figures that the aberration of the one may be corrected by that of the other. The substances chiefly used are crown-glass and flint-glass.

Objective. See *Object.*

Oblati (ob-lā'ti), or OBLATES, a name given from an early period in the Roman Catholic Church to children dedicated to the church, and now applied to such persons as associate themselves like monks or nuns but without taking vows. Under the name of Oblati of St. Ambrose a congregation of secular priests was established at Milan in 1578 by St. Charles Borromeo. The Oblates of Mary Immaculate, or of the Immaculate Conception, were founded in 1815, at Aix, by the Abbé Mazenod. Their duties were to consecrate themselves to parochial missions in their dioceses; to spiritual ministrations, especially to the young, to the poor, and to prisoners. The order has houses or missionary establishments in France, England, Scotland and the United States.

Obligation (ob-li-gā'shun), is a term in law which describes the bond under which a person binds himself to pay within a certain time and in the breaking of which a penalty is involved; or the tie in general by which a person is legally bound to the performance of anything.

Obligato (ob-li-ga'tō), or OBBLIGATO (Ital. 'required') in music, a part or accompaniment in a composition for a particular instrument of such character and importance that it is indispensable to the proper performance of the piece.

Obock (ō-bok'), a port and territory belonging to France on the African coast of the Gulf of Aden, near the entrance to the Red Sea. Total pop. 22,370.

Oboe (ō'boi), a musical wind instrument resembling a clarionet in shape, and sounded through a double reed. It consists of three joints besides the mouthpiece, and its compass is generally from B below the treble clef to F in alt, with the intermediate semitones, being a compass of two octaves and one-fifth. The name oboe is from the Italian; the French form, *hautboy* (*hautbois*), was formerly more frequently used.

Oboe.

Obolus (ob'o-lus), a small coin of ancient Greece, in later times of silver, the sixth part of an Attic drachma, equal to 2½ cents; multiples and submultiples of this coin were also used, and pieces of the value of 5, 4, 3, 2, 1½

A

Brass Obolus of Metapontum. A, Actual diameter of coin.

oboli, and ½, ⅓, ¼th of an obolus respectively are to be found in collections.

O'Brien, WILLIAM SMITH, an Irish nationalist, born in 1803; died in 1864. He entered parliament in

1826, and subsequently joined the Young Ireland group of politicians, and advocated the use of physical force. In an endeavor (1848) to effect a rising in Tipperary, he was surrounded, arrested, tried by special commission at Clonmel, and sentenced to death, but in the end this was commuted to transportation. He was set at liberty in 1854, and fully pardoned in 1856.

Obscurantism (ob-skū'ran-tizm), a word derived from Germany, where it was originally used at the time of the revival of learning, to signify opposition to progress and enlightenment. Those who opposed all innovation were called *Obscurants*.

Observation Car, a railroad car with open or glass sides, or ends, for obtaining an unobstructed view of the surrounding scenery or the track. It is used for tourists and by railroad officials on inspection trips.

Observants. See *Franciscans*.

Observatory (ob-zer'va-tur-i), a building devoted to the observation of astronomical, magnetic, meteorological, or other natural phenomena. The astronomical observatory is the one of most general interest. Astronomical observation began at an early date in China; the pyramids in Egypt seem in some way to have been associated with stellar observation; and the first historical observatory was founded in Alexandria 300 B.C. Its work was begun by Aristillus, and continued by Timocharis, Hipparchus, Aristarchus, and others. The first European observatory was built at Nuremberg by Bernhard Walther in 1472, and this was followed in the sixteenth century by Tycho Brahe's famous observatory on the island of Hven, near Copenhagen, while another was erected by the Landgrave of Hesse at Cassel in 1561. Through the labors of Brahe practical astronomy became associated with the universities, so that Leyden and Copenhagen founded observatories. These were followed by the construction of the Royal Observatory at Paris (1667), the Greenwich Royal Observatory (1675), the Tusculan Observatory near Copenhagen (1704), Berlin (1705; new observatory 1835), Vienna (1756), Dublin (1785), Königsberg (1813), Sydney (1820), Cape of Good Hope (1820), Edinburgh (1825), Pulkova, near St. Petersburg (1839), Cambridge, United States (1839), Washington (1845), Lick Observatory, California (1888), Chicago (1896), and others elsewhere. The chief instrument used in the observatory is the telescope, whether in the form of the equatorial or in the mural circle and transit instrument, together with the sidereal and the solar clock. In the larger observatories the application of spectrum analysis, photography, photometry, etc., has greatly increased the number and variety of observations. The observatory building must be constructed in a very stable manner, and as the instruments must be out of contact with the walls they are attached to stone pillars that rest on foundations separate from the rest of the building.

Obsidian (ob-sid'i-an), vitreous lava, or volcanic glass, lava which has become glassy by rapid cooling, generally placed among the felspars. Obsidian consists of silicate of alumina with iron, and lime or potash or soda according to the species of felspar involved. In Mexico and Peru cutting weapons and rings were manufactured out of it. See *Pumice* and *Pitchstone*.

Obstetrics. See *Midwifery*.

Ocarina (ok-a-rē'na), a musical wind-instrument of clay, of clumsy shape, pierced with a number of small holes, and giving a sweet tone.

Occam (ok'am), WILLIAM OF, a scholastic philosopher, born at Ockham, in Surrey, about 1270; died at Munich in 1347. He is said to have studied at Merton College, Cambridge, and also to have attended the lectures of Duns Scotus in Paris. He held several benefices in England, but entering the order of the Cordeliers, the latter and more distinguished part of his life was passed on the Continent. In 1322 he attended a general assembly of Franciscans at Pérouse, and there asserted the independence of princes in temporal affairs, and denounced the vices of the pope. For this he was condemned by the Council of Avignon, and being compelled to flee from Paris (1328) he took refuge with Louis of Bavaria. Occam is entitled *Doctor singularis et invincibilis*, and is noted as the philosopher who gave the final blow to the Realism of the middle ages, and perhaps the first effective blow to the pope's authority.

Occasional Causes, in metaphysics, a term employed by the Cartesians to explain the mode of communication between mind and matter. The soul being a thinking substance, and extension being the essence of body, no intercourse can take place between them without the intervention of the First Cause. It is Deity, therefore, who, on the occasion of certain modifications of our minds, excites the corresponding movements of body; and, on the occasion

of certain changes in our body, awakens the corresponding feelings in the mind.

Occident (o k′ s i - d e n t), the western quarter of the hemisphere, so called from the decline or setting of the sun; the west: used in contradistinction to *orient*.

Occultation (o k - u l - t ā′shun), is the term used in astronomy for the hiding of a star or planet from our sight by passing behind some other of the heavenly bodies, and specifically applied to the eclipse of a star or planet by the moon. The word denotes also the time during which a star or planet is so hidden from our sight.

Occupancy (ok′ū-pan-si), in law, the taking possession of a thing not belonging to any person, and the right acquired by such taking possession.

Ocean (ō′shan), or SEA, the vast body of water which covers more than three-fifths of the surface of the globe. Although no portion of it is completely detached from the rest, the ocean has often been divided into several great basins or areas, viz., the Pacific Ocean, which separates Asia and Australia from America; the Atlantic Ocean, which separates America from Europe and Africa; and the Indian Ocean, which intervenes between Africa and Australia; together with the Arctic and the Antarctic Oceans, around the north and south poles respectively. Between these no very definite limits can be drawn; thus it is impossible to say where the Atlantic or the Pacific ends and the Antarctic or Southern Ocean begins. The bed of the ocean appears to present the same irregularities as the surface of the land, being diversified by rocks, mountains, plains and deep valleys. The deepest soundings at present known are 4655 fathoms (northeast of Japan), 4561 fathoms (north of Porto Rico), 4475 fathoms (south of the Ladrone Islands). (See *Atlantic Ocean*, *Pacific Ocean*, etc.). The waters of the ocean vary as greatly in temperature as they do in depth. This is partly due to the ordinary effects of isolation; but the abrupt changes and anomalous distribution of temperature is chiefly owing to currents. (See *Currents, Marine.*) The Pacific and Indian Oceans are both warmer in low latitudes than the Atlantic, and the mean temperature of the equatorial areas at the surface is assumed to be 81°.5; the warmth of the North Atlantic is anomalous, and due to the influence of the Gulf Stream. This high temperature only applies to the surface water of the ocean, for experience shows that in both hemispheres and in all latitudes the basic water of the ocean is exceedingly cold. In low latitudes water at 32° has been drawn from great depths; while in high latitudes water at 26° has been found. This phenomenon is accounted for by the supposition that the cold water at the poles, by reason of its specific gravity, sinks to the bottom and spreads throughout the ocean basin. The saltness of the ocean is due to the presence of various saline ingredients (chiefly chloride of sodium or common salt), which are generally found in the proportion of from 30 to 40 per thousand. Recent observations have shown that the color and transparency of the water of the ocean are in a large measure dependent on the degree of saltness. In general it is found that the greater the transparency, and also that where the saltness is very great the water is of a dark-blue color, that where it is less the water is of lighter blue, inclining to green, and that in the neighborhood of rivers (where the saltness is reduced to a minimum) the water is as a general rule of a greenish-yellow.

Oceania (ō′she-an-i-a), includes all the islands of the Pacific between Asia on the northwest, the Indian Ocean on the west, the Antarctic Ocean on the south, and America on the north and east. It is usually divided into Australasia, Polynesia and Malaysia, or the Malay Archipelago.

Oceanus (ō-sē′an-us), in Greek and Roman mythology, the eldest of the Titans, regarded as the god of the ocean or the river surrounding the earth, and the parent of the Oceanides or ocean nymphs.

Ocellus (ō-sel′us), one of the minute simple eyes of insects, many echinoderms, spiders, crustaceans, molluscs, etc. In insects these ocelli or stemmata are usually situated on the crown of the head between the great compound eyes, whose simple elements they resemble in structure, and in rare cases may be the sole organs of vision.

Ocelot (ō′se-lot; *Felis pardălis*), a digitigrade carnivorous mammal of the cat kind, peculiar to the American continent. It attains a length of about 3 feet, while the tail measures some 18 inches more. The ocelot inhabits great forests; its food consists mainly of birds and rodents; and it is timid but bloodthirsty.

Ochil Hills (ō′kil), a hill range of Scotland, on the borders of Perth, Clackmannan, Kinross and Fifeshire; length about 25 miles; average breadth about 12; highest summit, Bencleuch, 2363 feet.

Ochre (ō'kėr), a combination of peroxide of iron with water; but the name is generally applied to clays colored with the oxides of iron in various proportions. Considerable quantities of ochre are obtained from the ferruginous mud separated from tin and copper ores; and it is also found in natural beds some feet thick in the more recent formations. Ochres vary in color from a pale sandy yellow to a brownish red, and are much used in painting.

Ocelot (*Felis pardalis*).

Ochrida (ok'ri-da), a town of European Turkey, in the mountainous region of Albania, on the shore of the lake of Ochrida, 2260 feet above sea level. It is the seat of Bulgarian and Greek bishops. Pop. 12,000.

Ockley (ok'li), SIMON, born at Exeter in 1678; died in 1720. He became professor of Arabic at Cambridge in 1711, and published a *History of the Jews*, several translations from Oriental languages, and a well-known *History of the Saracens*.

Oclawaha (ok-la-wa'ha; 'crooked water'), a river of Florida, which, after a very winding course of 275 miles, flows into the St. John's about 25 miles south of Palatka. Its banks are densely wooded, and the country so flat that the waters extend into the forest for a distance on either side. Many tourists visit it, and one of them relates that he steamed on this narrow river for five consecutive hours, and all that time was out of sight of land. He could see only trees and water.

Ocmulgee River (ok-mul'gē), a river which rises in the central part of Georgia, runs in a S. S. E. direction, passing the town of Macon and ultimately unites with the Oconee to form the Altamaha river. Length about 200 miles.

Oconee (ō-kō'nē), a river in Georgia, which rises in Hall Co., and unites with the Ocmulgee to form the Altamaha at Colquitt. It is navigable about 100 miles.

O'Connell (ō-kon'el), DANIEL, an Irish agitator, born in Kerry in 1775, and educated at a school in Cork and the Catholic colleges of St. Omer and Douay. He studied for the Irish bar, and soon became distinguished for legal skill and oratory. Turning his energy to Irish politics he advocated Catholic Emancipation; skilfully kept the agitation within constitutional lines; became member for Clare in 1828; and attained his triumph in the following year when the government of the Duke of Wellington granted the Catholic claims. After the Reform Bill he became conspicuous as the head of a parliamentary body called 'O'Connell's Tail.' In 1841 he developed his policy, called together enormous meetings throughout Ireland, and loudly raised a cry for the Repeal of the Union. This agitation Sir R. Peel and the government determined to put down. They arrested O'Connell, obtained a conviction, and sentenced him to twelve months' imprisonment with a fine of £2000. In a few months the House of Lords quashed this judgment. He made his last speech in parliament April, 1847, and died the following month.

O'Connor (ō-kon'or), THOMAS POWER, statesman, born at Athlone, Ireland, in 1848. He became a journalist, and in 1880 entered parliament as member for Galway, and was prominent in the Parnell party. In 1883 he became president of the Irish National League of Great Britain. He was an editor on several London papers, wrote *The Parnell Movement* and many magazine articles, and visited the United States on several occasions to raise money for the Irish cause.

O'Conor, CHARLES, lawyer, born in New York in 1804; died in 1884. He became one of the ablest of New York lawyers and was counsel in several celebrated cases. Thus he was senior counsel for Jefferson Davis when the Confederate ex-President was indicted for treason, and was conspicuous in the suits against William M. Tweed in 1871. He was elected president of the Law Institute of New York in 1869, was nominated for President of the United States by one of the many conventions of 1872, and in 1876 appeared before the Electoral Commission in support of the claim of Samuel J. Tilden against Rutherford B. Hayes to the Presidency.

Oconto (ō-kon'tō), a city, capital of Oconto Co., Wisconsin, one of the largest lumber manufacturing points in the State, is on Green Bay, at the mouth of Oconto River. It has an im-

BATTLE BETWEEN AN OCTOPUS AND A LOBSTER

portant fish trade, and has brewing, canning and flouring industries. Pop. 5629.

Ocracoke Inlet (ō'kra-kōk), an inlet of North Carolina, forming a passage into Pamlico Sound, 22 miles southwest of Cape Hatteras. On each side of the channel are dangerous shoals; on the bar are 14 feet at low water.

Ocrea (ō'kre-à), in ancient costume, a greave or legging, made of tin, bronze, or other metal, covering and protecting the front of the leg from the knee to the ankle.

Octagon (ok'ta-gon), in geometry, is a figure of eight sides and angles, which when the sides and angles are all equal is called a *regular octagon*, and when they are not equal an *irregular octagon*.

Octahedron (ok-ta-hē'dron), in geometry, a solid contained by eight equal and equilateral triangles. It is one of the five regular bodies.

Octant (ok'tant), in astronomy, that position or aspect of a heavenly body, as the moon or a planet, when halfway between conjunction or opposition and quadrature, or distant from another point or body the eighth part of a circle or 45°. The word is also applied to an instrument for measuring angles, resembling a sextant or quadrant in principle, but having an arc the eighth part of a circle, or 45°.

Octave (ok'tāv), in music, an interval of seven degrees or twelve semitones above or below some sound counted from; or one sound eight tones higher than another. The octave is the most perfect of the chords, consisting of six full tones and two semitones major. It contains the whole diatonic scale. The most simple perception that we can have of two sounds is that of unisons, or sounds of the same pitch, the vibrations beginning and ending together. The next to this is the octave, where the more acute sound makes precisely two vibrations while the grave or deeper makes one; consequently, the vibrations of the two meet at every single vibration of the more grave one. Hence the ratio of the two sounds that form the octave is as 1 to 2. See *Music*.

Octavia (ok-tā'vi-a), daughter of Caius Octavius and Atia, and sister to the Emperor Augustus, illustrious for her virtues, her beauty, and her accomplishments, was the widow of Claudius Marcellus, by whom she had a son and two daughters before she was married, at the instance of her brother, to the triumvir Mark Antony. The latter neglected her for Cleopatra, queen of Egypt; notwithstanding which, Octavia displayed the most noble fidelity to his house and fortunes, and devoted herself to the education of all his children, until he divorced and ordered her to leave his house, a command she obeyed without complaint. She died in 11 B.C.

Octavius, or OCTAVIANUS. See *Augustus*.

Octavo (ok-tā'vō), the size of one leaf of a sheet of paper folded so as to make eight leaves: usually written *8vo;* hence, a book having eight leaves to the sheet. There are different sizes of octavo, arising from the different sizes of paper employed; as, *foolscap 8vo*, *demy 8vo*, *imperial 8vo*.

October (ok-tō'bėr; from the Latin *octo*, eight), originally the eighth month in the Roman calendar, whence its name, which it still retained after the beginning of the year had been changed from March to January.

Octopus (ok'tu-pus), a genus of dibranchiate Cephalopoda, familiarly known as cuttle-fishes. They have eight arms, each with two rows of suckers, which are sessile or unstalked. The prominent head is joined to the body by a distinct neck, and the body itself is short, generally more or less rounded in shape, and unprovided with side or lateral fins. They have attained a notoriety from tales circulated concerning their ferocity and the existence of gigantic members of the genus, though the largest

The Common Octopus or Cuttle (*O. vulgāris*).

cuttle-fishes that have been met with have belonged to other genera. The *O. vulgāris*, or common cuttle, is common in the Mediterranean. It is said to reach a length of 9 feet and a weight of 68 pounds, the arms being long and slender.

Octroi (ok-trwà), an old French term signifying a grant, privilege, or monopoly from government to a person or to a company. Octroi also signifies a tax levied at the gates of French cities,

towns, etc., on produce brought in for use.

Ocuba-wax (o-kū′ba), a vegetable wax obtained from the fruit of *Myristica ocūba*, *officinālis*, or *sebifĕra*, a plant of the nutmeg genus growing abundantly in the marshy grounds on the shores of the Amazon and its tributaries. It is easily bleached, and is used extensively in Brazil for the manufacture of candles.

Oczacow (och-â-kof′), or OTCHAKOF, a town in the Russian government of Kherson, on the Black Sea, at the mouth of the Dnieper, formerly an important Turkish fortress. Pop. 10,784.

Od, or ODIC FORCE, the name invented by Reichenbach and given by him to a peculiar force which he fancied he had discovered associated with magnetism. It has met with few scientific believers. Called also *Odyl*, *Odylic Force.*

Odalisk, ODALISQUE (ō′da-lisk; from Turk, *odalik*, a chamber companion), a female slave or concubine in the sultan's seraglio or a Turkish harem.

Odal Right (ō′dal), a free tenure of property, similar to allodial tenure, which prevailed in Northern Europe before the introduction of the feudal system. Odal or udal tenure still prevails in Orkney and Shetland.

Odd Fellows (od′fel-lōz), a large and extensively ramified friendly society, having its origin in Manchester, England. It was originally an association of a convivial kind, modeled on freemasonry, and still retains watchwords and secret signs. It assumed its present form at a convention in Manchester (1813), and has spread widely in Britain and elsewhere. It has been very prosperous in the United States, the first lodge, organized in Baltimore, April 26, 1819, becoming in 1825 the Grand Lodge of the United States. The membership in this country is now over 1,400,000. The American system has become popular in France, Germany, Switzerland, Holland, Sweden, Denmark, and various other countries. The amount paid for relief of members, burial of the dead, etc., annually is now over $5,000,000. See *Friendly Societies.*

Ode (ōd), a poem of lyrical character, supposed to express the poet's feelings in the pressure of high excitement, and taking an irregular form from the emotional fervency which seeks spontaneous rhythm for its varied utterance. The Greeks called every lyrical poem adapted to singing—and hence opposed to the elegiac poem—an ode (*ōdē*, that is, *song*). The principal ancient writers who employed this form of verse were Pindar, Anacreon, Sappho, Alcæus, among the Greeks, and Horace among the Romans. As employed by English writers the ode takes either the Pindaric form of strophe, antistrophe, and epode irregularly arranged and contrasted; or, as in its later development, the form of a series of regular stanzas.

Odenkirchen (ō′den-kir-*h*en), a town of Prussia, province of Rheinland, 15 miles W. S. W. of Düsseldorf. Pop. 16,808.

Odense (ō′then-sā), a seaport town of Denmark, capital of the Island of Funen, on a stream, and near the fiord of same name. It is well built; has an ancient and magnificent cathedral. Pop. 40,138.

Odenwald (ō′den-vâlt), a forest and chain of mountains in Western Germany, between the Neckar and the Main, in the territories of Hesse, Baden and Bavaria. The Odenwald is about 50 miles in length, and presents charming scenery.

Odeon (ō-dē′on; Gr. *ōdcion*, from *ōdē*, a song), a kind of theater in ancient Greece in which poets and musicians submitted their works to the approval of the public, and contended for prizes. The name is now sometimes applied to a hall or chamber for musical or dramatic performances.

Oder (ō′dėr), a river of Germany, which rises in the Moravian table-land, 14 miles east of Olmütz; flows for about 50 miles through Moravia; forms the frontier between Prussian and Austrian Silesia; becomes navigable at Ratibor; traverses the provinces of Silesia, Brandenburg and Pomerania; widens into a maritime lake called the Stettin Haff; and enters the Baltic by the three channels of the Peene, the Swine, and the Dievenow; length about 550 miles. The traffic on this river is important, and the principal towns on its banks are Breslau, Glogau, Frankfort, Küstrin and Stettin.

Odessa (ō-des′sa), a Russian seaport in the government of Kherson, situated on the Black Sea, between the mouth of the Dnieper and Dniester, on the bay of Odessa. After the cession of Bessarabia by the Peace of Jassy in 1792, Catharine II fixed on this spot, then containing only a few houses, as a commercial emporium. The roadstead is large and deep, but dangerously exposed to easterly winds. The shipping, however, is protected in three large harbors inclosed by moles, and the city is fortified in the modern style. Odessa is situated on the edge of a sterile plateau which

here sinks abruptly to the sea. The streets are straight, wide, and cross each other at right angles; there are some fine promenades, two public gardens, and numerous public buildings. The educational institutions include a university founded in 1865. Odessa is one of the chief wheat ports in the East, while wool, timber, hemp, flax, iron, coal, etc., are among the staple exports. Besides the maritime trade, Odessa carries on a large overland trade by rail with Germany, Austria, France, Switzerland and Italy. Odessa was partially bombarded in 1854 during the Crimean war, and was devastated by riots in 1905. Pop. 449,673.

Odin (ō′din), or WODEN, the chief god of the Scandinavian mythology, the omniscient ruler of heaven and earth, having his seat in Valaskjalf, where he receives through his two ravens tidings of all that takes place in the world. As war-god he holds his court in Valhalla, where all brave warriors arrive after death and enjoy the tumultuous pleasures they delighted in while on earth. His wife is Frigga. The fourth day of the week, Wednesday, derived its name from this deity. See *Northern Mythology*.

Odoacer (ō-dō-ā′sėr), the first barbarian king or ruler of Italy after the fall of the Western Empire, A.D. 476 to 493. He was of German origin, the son of Edico or Idico, hereditary head of the Scyrri tribe, and received his early training in the camp of Attila, king of the Huns. He afterwards journeyed into Italy, and joined the imperial guard of the Roman army. He was chosen head of the barbarian confederates, and having overthrown Romulus Augustulus, the last of the Roman emperors, he assumed the title of king in 476. Out of policy he paid court to the Byzantine emperor Zeno, from whom he received the title of *Patricius* or Patrician. He ruled with vigor and wisdom. In 489 Italy was invaded by the Ostrogoths under Theodoric, and in repeated battles Odoacer was defeated, being finally besieged in Ravenna, on the fall of which city he was assassinated.

Odometer (o-dom′e-tėr). Same as *Hodometer* (which see).

O'Donnell (ō-don′el), LEOPOLD, Duke of Tetuan, Marshal of Spain, born in 1809; died in 1867. He was descended from an Irish family long settled in Spain; entered the army and became a colonel; fought against the Carlists in 1833; drove Espartero from power in 1843; was minister of war in 1854, and prime minister in 1856 and 1858. He commanded with success in the campaign against the Moors 1859-60, being then created Duke of Tetuan. He was at the head of ministries in 1863 and 1865-66.

O'Donovan (ō-don′o-van), JOHN, Irish Celtic scholar, born in 1809; died in 1861; published (with Prof. O'Curry) the *Brehon Laws*, *Annals of the Four Masters*, etc.—His son, EDMOND O'DONOVAN (born 1838), war-correspondent and traveler, published the *Merv Oasis*, and was killed in the Soudan in 1883.

Odontoglossum (o-dont-o-glos′um), an extensive genus of orchids, natives of Central America, much prized by cultivators for their magnificent flowers, which are remarkable both for their size and the beauty of their colors. A considerable number of species

Odontoglossum Alexandræ.

have been introduced into Europe, and grow well in a moderate temperature. *O. crispum* or *O. Alexandræ* is a superb flower, and is named after the Princess of Wales.

Odontophore (o-don′to-fōr), the so-called 'tongue' or masticatory apparatus found in the mouth of the three classes of higher mollucs—the Gasteropods, Pteropods and Cephalopods—which are thus collectively known as the Odontophora. This structure consists of a gristly portion, which supports a ribbon or strap-like band provided with flinty or siliceous teeth variously disposed in a transverse manner.

Odonthornithes (o-dont-or′nith-ēz), a name for certain fossil birds characterized by having teeth, as the hesperornis and ichthyornis (see those articles).

Odysseus (o-dis′ūs). See *Ulysses*.

Odyssey (od′is-si), an epic poem attributed to Homer, in which the adventures of Odysseus (Ulysses) are celebrated. See *Homer.*

Œcolampadius (e k-ol-am-pā′di-us), JOHANN, an early Protestant writer, born of a Swiss family at Weinsberg, in Suabia, in 1482; died in 1531. His proper name was Heussgen or Hussgen, which, according to the custom of the time, he converted into Œcolampadius. He studied law at Heidelberg and Bologna; became tutor to the sons of the elector-palatine; afterwards prepared himself for the ministry and accepted a call as preacher to Basel. When Luther spread his doctrine of reform it was accepted by this Swiss preacher, who fearlessly proclaimed his new faith (1522) from his pulpit at Basel. Subsequently, however, he took the view of Zwingle regarding the Lord's Supper, and on this point disputed with Luther and Calvin. Among the works which he wrote in defense and furtherance of the Reformation are *De Ritu Pasehali*, and *Epistola Canonicorum Indoetorum ad Eccium.*

Œcumenical (ē-kū-men′i-kal; Greek, *oikoumenikos*, pertaining to the whole inhabited world), universal, an epithet applied to the general councils of the church. From the time of the Council of Chalcedon (451) the patriarchs of Constantinople took the title of œcumenical, in the same sense as the epithet Catholic is used in the Western Church. See *Council.*

Œdema (ē-dē′ma), a swelling occasioned by the presence of water which collects in the interstices of the cellular tissues. The subcutaneous cellular tissue is the most frequent, but not the only, seat of œdema. The other forms which are most frequently recognized during the life of the patient are œdema of the lungs and of the glottis. Œdema of the brain is of less frequent occurrence and less easily recognized, and œdema of the submucous and subcellular tissue seldom produces symptoms sufficiently decisive to determine their nature. When the disease is associated with erysipelas, deep-seated suppuration, or a morbid state of the circulation, it is attended with great danger.

Oedenburg (*eu*′dėn-bu̱r*h*), a town of Western Hungary, capital of the county of the same name, on a plain near Lake Neusiedl, 36 miles S. S. E. of Vienna. It is well built, and has manufactures of woolen, linen, cotton cloth, sugar-refining, etc. Pop. 33,478.

Œdipus (ed′e-pus), in ancient Greek legend, son of King Laius of Thebes, was exposed as an infant—on account of an oracle saying that Laius would be killed by his son—and was brought up at the court of Corinth. Having solved the riddle of the Sphinx he became king of Thebes, unknowingly killed his own father and married his mother Jocasta—a fate foretold by the Delphic oracle. On realizing what had been done Jocasta hanged herself, and Œdipus put out his own eyes. This story has been used by the poets to symbolize the helplessness of man before Fate. The *Œdipus* of Æschylus and Euripides are lost, but the *King Œdipus* and *Œdipus at Colonos* of Sophocles remain. The story has also been made the subject of tragedies by Corneille, Voltaire, Chénier, Dryden and Lee.

Oehlenschläger (*eu*-lėn-shlā′gėr), ADAM GOTTLOB, born in a suburb of Copenhagen in 1779; died in 1850. His education was desultory; he tried the stage under the training of Rosing; entered the University of Copenhagen in 1800, and published his first volume of poems in 1803; was soon recognized as the chief Danish poet; received a government grant which enabled him to visit Germany, France, Switzerland and Italy (where he met Goethe, Fichte, Madame de Stäel), and thereby deepened his interest in the new Romantic movement spreading through Europe. His finest works, such as *Baldur hin Gode*, *Palnatoke*, *Axel og Valborg*, and the tragedy of *Hakon Jarl*, were written at this period. Returning to Denmark in 1810, after an absence of five years, he was appointed professor of æsthetics in the University of Copenhagen. In the controversy which his writings occasioned Oehlenschläger took no personal part, but continued to write almost to the end, his chief works, besides those above-mentioned, being: *Helge*, *Hroars Saga*, *Nordens Guder*, *Erik og Abel*, *Dronning Margrethe* and *Dina.*

Oeil-de-bœuf (ē′il-de-buf; Fr., 'ox-eye'), applied in architecture to the round or oval openings in the frieze or roof of a large building to admit light.

Oeland (*eu*′lånt), a Swedish island in the Baltic, on the east coast of Sweden opposite Kalmar, and separated from the mainland by a sound which has an average breadth of 10 miles. In length it is 85 miles, its breadth averages about 4 miles, and the population is 30,408.

Oels (eulz), a town of Prussia, in the province of Silesia, 17 miles northeast of Breslau, on the Oelsa. It has manufactures of agricultural implements,

and several oil and other mills. Pop. 10,940.

Oelsnitz (eulz'nits), a town of Germany, in Saxony. Pop. 13,966.

Oelwein (ōl'wīn), a city of Fayette Co., Iowa, 14 miles N. of Independence. It has railroad, machine shops, farming and dairying industries, etc. Pop. 6028.

Oerebro. See *Orebro.*

Oersted. See *Orsted, Hans Christian.*

Oesel (*eu*'zl), an island of Russia, government of Livonia, in the mouth of Riga; length about 80, greatest breadth about 40 miles. Its coast is generally bold and its interior undulating, and the climate is much milder than on the adjoining mainland. It raises corn, hemp, flax, and the fisheries are valuable. Pop. 60,000.

Œsophagus (ē-sof'a-gus), or GULLET, the membranous and muscular tube which leads from the pharynx or back part of the mouth to the stomach. In man the length of the gullet is from 9 to 10 inches. It begins at the fifth cervical or neck vertebra, at a point corresponding with the cricoid cartilage of the larynx, and it runs in a slightly deviating course downwards to the stomach. Thus in the neck it lies close behind the windpipe; while in the chest it bends to the right side and then to the left before it pierces the midriff or diaphragm—which forms the floor of the chest—by a special aperture existing in that structure. Internally the gullet is lined by mucous membrane, and between the mucous and muscular layers cellular tissue exists. The mucous or lining membrane is thick and of pale color, and is arranged in longitudinal furrows or folds. In the lower animals the modifications of the œsophagus are various. In birds, for instance, it presents the expansion known as the *crop.*

Œstrus. See *Gadfly.*

Œta (ē'tȧ), a mountain in ancient Greece, forming the south boundary of Thessaly, and separating that country from Central Greece. At the east extremity was the Pass of Thermopylæ. See *Thermopylæ.*

Ofen. See *Budapest.*

Offa, a distinguished king of Mercia, who attained the throne after Ethelbald, on defeating the usurper Beornred, (A.D. 757). He brought Kent under his sway, and reduced the power of Wessex by a defeat inflicted in 777. He also defeated the Welsh, took from them part of their border lands, and to keep them within their new limits erected here the rampart known as Offa's Dyke (which see). Later he murdered Ethelbert, king of East Anglia, and seized his kingdom. He founded the Abbey of St. Albans, and was a liberal patron to the church. He died in 796.

Offa's Dyke, a rampart, the remains of which may still be seen extending along the English and Welsh border from the vicinity of Newmarket, in Flintshire, to Beachley, at the mouth of the Wye; length about 100 miles. Its erection is ascribed to King Offa of Mercia. See above.

Offenbach (of'en-bȧh), a town of Germany, Grand-duchy of Hesse, 5 miles E. S. E. of Frankfort (with which it is connected by an electric railway), on the left bank of the Main. It is well built, has an old castle, and is an important commercial and manufacturing center, its industries embracing various chemical products, as aniline, white-lead, vaseline, celluloid, etc.; metal goods, leather goods, paper, etc. Pop. 58,806.

Offenbach, JACQUES, a French composer, born of Jewish parents at Cologne in 1819; died in 1880. He entered the Paris Conservatoire in 1835; became proficient on the violoncello, and for some time played on this instrument in the orchestra of the Théâtre Comique. In 1847 he became conductor at the Théâtre Français, and subsequently opened the 'Bouffes Parisiens,' where he enjoyed immense popularity as the composer of such operas as *Orphée aux Enfers, La Grande Duchesse, La Belle Hélène, Madame Favart, La Barbe Bleue, Geneviève de Brabant* and *La Princesse de Trebizonde.*

Offenburg (of'en-bụrg), a town of Baden, on a hill near the right bank of the Kinzig, 42 miles south of Carlsruhe. It is well built, has a fine town house, merchant-hall, gymnasium, and thriving manufactures. Pop. 15,434.

Offerings. See *Sacrifices.*

Offertory (of'ėr-tur-i), that portion of the service of the Eucharist in which the offerings of the congregation are made, whether these consist of bread and wine or alms. The term is used in the Roman Catholic Church to denote that portion of the mass which is being sung when the priest offers the bread and wine; while in the Church of England it is applied to the sentences read from the service when the alms are being collected, or is applied to the alms themselves.

Office (of'is), DIVINE, in the Roman Catholic Church, the entire com-

plement of services which constitute the established order of celebration of public worship. See *Breviary*, *Missal* and *Liturgy*.

Officinal (o-fis'i-nal); (Latin, *officīna*, a workshop), in pharmacy, the name applied to the recipes admitted into the pharmacopœia, and in particular to plants used in the preparation of recognized medical recipes.

Offing (of'ing), a nautical term signifying the position of a vessel, or of a portion of the sea within sight of land, relatively to the coast. The offing may be taken to represent that part of the sea beyond the mid-line between the coast and the horizon.

Og, king of Bashan at the time of the conquest of Canaan by the Israelites, by whom he and his people were destroyed.

Ogden (og'den), a city, capital of Weber County, Utah, 37 miles N. of Salt Lake City, at the junction of the Central Pacific, Union Pacific, and Utah Central Railroads; has large agricultural and mining interests and a large shipping and supply trade. It has canneries, woolen and knitting mills, tile and pipe works, etc. Iron, coal, lime and salt occur in its vicinity. Pop. 25,580.

Ogdensburg (og'denz-burg), a town and river port of New York, on the right bank of the St. Lawrence, at the mouth of the Oswegatchie, 72 miles below Lake Ontario. It is regularly laid out, well built, and a place of very extensive trade. It has also extensive manufactures of flour, lumber, silks, brass goods, leather, etc. Pop. 15,933.

Ogee (ō'jē), in architecture, a molding consisting of two members, the one concave, the other convex, or of a round and a hollow; otherwise called a *cyma reversa*. (See *Cyma*.) An *ogee arch* is an arch with a similar curve. Ogee is frequently expressed by the two capitals OG.

Ogham (og'am), a particular kind of writing practiced by the ancient Irish and some other Celtic nations.

Ogham Inscription, from a stone found near Ennis.

Its characters (also called *oghams*) consist principally of lines or groups of lines deriving their significance from their position on a horizontal or chief line, under, over, or through which they are drawn, either perpendicular or oblique; curves rarely occur. Authorities differ as to the total number of letters represented in the alphabet, some making sixteen, others twenty-five. Regarding the age of this form of writing it is now supposed that it was used not only in prehistoric times, but also so late as the ninth and tenth centuries. Stones with ogham inscriptions are found in Leinster and Connaught, also in some parts of Wales. Spelled also *Ogam*.

Oglethorpe (ō'gel-thorp), James Edward, colonizer, was born at London in 1689; died in 1785. He served as a soldier under Marlborough and Prince Eugene in Germany, and in 1733 formed a colony of insolvent debtors in Georgia. He remained for ten years in Georgia, fought the Spanish invaders, and after his return was a member of Parliament for many years.

Oglio (ol'yō), a river of N. Italy, which rises in the Alps, drains Lake Iseo, and falls into the Po; length, 150 miles.

Ogoway (ō'gō-wā), Ogowai, or Ogowé, a river of Africa which enters the Atlantic at Cape Lopez through a large delta on the west coast, about 400 miles north of the Congo. Its course is chiefly in the French Congo Territory, and its chief affluents are the Ivindo and the Ngunie. A number of French stations have been established on its banks.

Ogyges (o-gī'jēz), in Greek mythology, the most ancient ruler of Attica, in whose reign happened a great deluge.

O'Higgins, Ambrosia, a South American administrator, was born in County Meath, Ireland, about 1770. He was educated in Spain and afterwards became a trader in Chile. Here he entered the army, rose rapidly in rank, and was captain-general of Chile, 1788-96, and then viceroy of Peru till his death in 1801.

O'Higgins, Bernardo, son of the preceding, was born at Chillan, Chile, in 1776, was educated in England, and in 1810 took a prominent part in the Chilean insurrection. He was made commander of the patriot army in 1813, was defeated by the Spanish forces in 1814, joined San Martin in his invasion of Chile and aided in the victory of Chaeabuco, 1817. He was then made supreme dictator of Chile, and in 1818 proclaimed independence, which was decided by the victory of Maipo, April 5, 1818. His rule was an excellent one, but he was forced to resign by a revolution in 1823, and retired to Peru, where he died in 1842.

A 84° B 83° C 82° D 81° E
1
2
3
4
5
41
42
40
38
MICHIGAN
ONTARIO
Lake St. Clair
Detroit
Chatham
Ann Arbor
Jackson
Sarnia
Bruceau
Hudson
Monroe
PT. PELEE I.
LAKE ERIE
Toledo
Put-in-Bay
Kelley's I.
Lorain
Cleveland
Airport Harbor
Painesville
Ashtabula
Conneaut
Kingsville
Pierpont
Jefferson
Rockcreek
Andover
E. Orwell
Kinsman
Cortland
Niles
Warren
Youngstown
Akron
Canton
Alliance
Massillon
Wooster
Mansfield
Lima
Findlay
Tiffin
Fremont
Sandusky
Marblehead
Huron
Berlin Heights
Norwalk
Monroeville
Chicago Jct.
New London
Shiloh
Ashland
Shelby
Galion
Marion
Bucyrus
Crestline
Sycamore
Carey
Arlington
Bluffton
Beaverdam
Ada
Spencerville
Delphos
Van Wert
Celina
St. Marys
Coldwater
Wapakoneta
Rockford
Mendon
Willshire
Convoy
Scott
Columbus Grove
Kalida
Ottawa
McComb
Leipsic
Deshler
Bryan
Edgerton
Farmer
Sherwood
Hicksville
Archbold
Stryker
Montpelier
Whitehouse
Waterville
Perrysburg
Grand Rapids
Napoleon
Liberty Center
Holgate
Delta
Wauseon
Swanton
Sylvania
Alvordton
Pioneer
Edon
Bowling Green
Pemberville
Weston
Bradner
Rising Sun
Fairview
Gibsonburg
Castalia
Clyde
Kimball
Milan
Vermilion
Elyria
Oberlin
Grafton
Berea
Brunswick
Peninsula
Cuyahoga Falls
Hudson
Mantua
Garrettsville
Hiram Sta.
Ravenna
Newton Falls
Mineral Ridge
Lagrange
Wellington
Lester
Spencer
Medina
Wadsworth
Seville
Lodi
Rittman
Orrville
Canal Fulton
Sterling
New Berlin
Sebring
Lisbon
Salineville
Wellsville
Toronto
Steubenville
Empire
Bergholz
Bowerston
Sherodsville
Carrollton
Malvern
Minerva
Leetonia
Columbiana
Waterford
Wellsville
Brookfield
Sharon
Greenville
Transfer
Hubbard
Girard
Warren
Niles
Lordstown
Newton Falls
Mineral Ridge
Deerfield
Alliance
Louisville
Navarre
Bolivar
Fredericksburg
Canal Dover
Dover
Barnhill
Jewett
Dennison
Uhrichsville
Cadiz
Dillonvale
Smithfield
Freeport
Kimbolton
Flushing
Cambridge
St Clairsville
Mt. Pleasant
Bridgeport
Quaker City
Lore City
New Concord
Zanesville
Pleasant City
Senecaville
Buffalo
Beallsville
Summerfield
Clarington
Woodsfield
Graysville
Hannibal
Matamora
Martinsville
Warner
Stanleyville
Marietta
Parkersburg
Belpre
Athens
Jacksonville
Chesterhill
McConnelsville
Beverly
Caldwell
Roseville
Crooksville
Philo
Somerset
Baltimore
Pleasantville
Ashville
Lancaster
Bremen
Rendville
Corning
Glouster
New Lexington
Shawnee
Straitsville
New Straitsville
Amanda
Circleville
Logan
Hocking
Nelsonville
South Bloomingville
Laurelville
Kingston
Chillicothe
Frankfort
Clarksburg
Sabina
Wilmington
Leesburg
Clarksville
Greenfield
New Vienna
Lynchburg
Bainbridge
Hillsboro
Waverly
Coalton
Glenn
McArthur
Byer
Zaleski
Albany
Dyesville
Hamden
Jackson
Wellston
Dexter
Alice
Langsville
Pomeroy
Middleport
Syracuse
Ohio River
Cincinnati
Loveland
Lockland
Cleves
Pleasant Ridge
Milford
Blanchester
Batavia
Mowrystown
Williamsburg
Amelia
Addyston
Home City
Delhi
Covington
Sardinia
Sinking Spring
Piketon
Wilson
Locust Grove
Lucasville
Oakhill
Bidwell
Gallia
Gallipolis
Webster
Wheelersburg
Portsmouth
Ripley
Manchester
Aberdeen
Buenavista
Powellsville
Ironton
Dobbston
Coalgrove
Hanging Rock
Victorville
Kenova
Ohio
Marysville
Flemingsburg
Carlisle
Grayson
Morehead
Big Sandy R.
Georgetown
Paris
Lexington
Mt. Sterling
Winchester
Williamstown
Felicity
New Richmond
Bethel
Winchester
Georgetown
Harden
Henley
Mowrystown
Taylorsville
Sardinia
Sinking Spring
Piketon
Jackson
Alice
Dexter
Langsville
Pomeroy
Middleport
Syracuse
Ohio River
Cincinnati
Loveland
Lockland
Cleves
Pleasant Ridge
Milford
Blanchester
Batavia
Williamsburg
Amelia
Addyston
Home City
Delhi
Covington
Hillsboro
Bainbridge
Waverly
Coalton
Glenn
McArthur
Byer
Zaleski
Albany
Dyesville
Hamden
Jackson
Wellston
Dexter
Alice

Ohio (ō-hī′ō), a river of the Mississippi valley, formed by the confluence of the Allegheny from the north and the Monongahela from the south, at Pittsburgh in Pennsylvania, where it is a navigable stream 600 yards broad. It flows W. S. W., separating the States of Virginia and Kentucky on the south from Ohio, Indiana and Illinois on the north, and enters the Mississippi at Cairo. Its length from Pittsburgh to its junction with the Mississippi is 975 miles; area of basin, 214,000 square miles. The width of the river varies from 400 to 1400 yards; average width, about 800 yards, at its mouth 900 yards. Its principal affluents are the Miami, Kentucky, Wabash, Green, Cumberland and Tennessee.

Ohio, one of the United States, which ranks fourth in point of population, is bounded on the north by Lake Erie and the State of Michigan, west by Indiana, south by West Virginia and Kentucky, east by West Virginia and Pennsylvania; area, 41,040 square miles. In the north the surface is generally level, and in some places marshy; in the east and southeast it is rugged and broken by hills, but never rises into mountains. In its natural state Ohio was covered with dense forests; now they cover but about one-fifth, the trees most abundant being several varieties of oak, maple, ash, black and white walnut, chestnut, beech, poplar, sycamore, linden, etc. The drainage is divided between the Ohio and Lake Erie, the watershed which crosses the State being about 600 feet above lake level. The State forms a plateau of about 800 to 1000 feet above sea level. The Ohio, which receives the far larger share of the drainage, bounds the State partly on the east and wholly on the south, and is augmented from within it by the Mahoning, Beaver, Muskingum, Hockhocking, Scioto and the Great and Little Miami; the former, which washes the northern frontier for 160 miles, receives the Maumee, Portage, Sandusky, Huron, Cuyahoga, Grand and Ashtabula. The climate in the northern parts is characterized by severe winters; the summers and autumns are mild and agreeable. In the south the winters are very mild, the summers long and often intensely hot. The chief crops are Indian corn (the staple), wheat, oats, rye, buckwheat, barley and tobacco, while the orchard products are important. Apples thrive in some sections, and flax, linseed, and other crops are cultivated. The lake fisheries are valuable. Horses, sheep, cattle and swine are reared in great numbers. The dairy product is very large while the wool clip is one of the largest in the States. Coal underlies the greater part of the state and iron ore is abundant, particularly in the northeast, while salt, marble, limestone, freestone and gypsum are found in many districts. Petroleum is a valuable product, while natural gas is richly developed. The more important manufactures are bar, sheet and railway iron, machinery, hardware, and various articles in metal; leather, woolen cloth, paper and spirits. Cotton, silk, flax and mixed goods are also made to some extent. The foreign trade, carried on chiefly with Canada across Lake Erie, is comparatively small; but a very extensive inland trade is carried on both by the Ohio and by numerous canals and railways, which traverse the country in every direction. Among the higher educational establishments are the universities at Athens and Cincinnati; several denominational universities and colleges; schools of law, medicine and theology. Columbus is the capital, but the two largest towns are Cincinnati and Cleveland, others being Toledo, Dayton and Springfield. Pop. 4,767,121.

Ohlau (ō′lou), a town in Prussia, in the province of Silesia, 18 miles southeast of Breslau, on the Ohlau, and on the railway to Cracow. Pop. 9233.

Ohlenschläger. See *Œhlenschläger.*

Ohm (ōm), Georg Simon, German physicist, born in 1787; died in 1853. He became successively professor of physics at Cologne, director of the Polytechnic at Nuremberg, and professor of physics at the University of Munich. He was the discoverer of what is known as 'Ohm's Law' in electricity (which see); and among his scientific works were *Die Galvanische Kette, Grundzüge der Physik,* etc.

Ohm, the unit of resistance to the passage of electricity adopted by the British Association. A piece of pure copper wire 485 meters long and 1 millimeter in diameter at 0° C. has a resistance of about one ohm. A 'megohm' is a resistance equal to 1,000,000 ohms, and a microhm is a resistance equal to one millionth of an ohm.

Ohm's Law, an important law in electricity, deduced by Professor Ohm, to the effect that *the intensity of the electric current is directly proportional to the whole electro-motive force in operation, and inversely proportional to the sum of the resistances in the circuit.*

Ohnet, Georges, a French novelist, born in 1848. His works, which were very popular, have the general title of *Les Batailles de la Vie* ('The

Battles of Life'). Among them are *Le Maitre de Forges*, *Le Grande Marnière*, *Nimrod et Cie* and *Le Femme en Gris*.

Oïdium (ō-id'i-um), a genus of microscopic fungi. *O. Tuckeri* is the vine mildew, parasitical, in the form of a white and very delicate layer, upon the leaves and green parts of vines, and destroying the functions of the skin of the part it attacks.

Oidium.

Oil-beetle, the name given to coleopterous insects of the genus *Meloë*, and the family Cantharidæ, from the oily-like matter which they exude. The perfect insects have swollen bodies, with shortish elytra, which lap more or less over each other, and have not a straight suture, as in most coleopterous insects.

Oil-bird. See *Guaeharo.*

Oil-cake, a cake or mass of compressed linseed or rape, poppy, mustard, cotton, and other seeds from which oil has been extracted. Linseed-cake is much used as a food for cattle, its value as a fattening substance being greater than that of any kind of grain or pulse. Rape-cake is used as a fattening food for sheep. These and other oil-cakes are also valuable as manures.

Oil City, a city of Venango County, Pennsylvania, on the Allegheny, 132 miles N. by E. of Pittsburgh. It is the principal oil market in the Pennsylvania petroleum field, there being numerous oil wells in the vicinity and immense quantities of oil being bought and sold here. There are extensive oil refineries and various manufacturing industries connected with the trade. Pop. 15,857.

Oil-gas, the inflammable gas and vapor (chiefly hydrocarbon) obtained by passing fixed oils through red hot tubes, and which may be used like coal-gas for purposes of illumination. The oil in its passage through the retorts is principally decomposed, with the production of ethylene, marsh-gas, hydrogen, carbonic oxide, benzine, etc.

Oil of Vitriol, the common name of strong sulphuric acid (which see).

Oil-painting. See *Painting.*

Oil-palm (*Elæis guineensis*), an African tree abounding on the west coast of that continent, whose fruit yields palm-oil. See *Palm-oil.*

Oils, the name of certain substances formed within living animal or vegetable organisms, liquid at ordinary temperatures, having a more or less viscid consistence, insoluble in and lighter than water, taking fire when heated in air, and burning with a more or less luminous flame. The oils are usually divided into the *fat* or *fixed oils*, and the *volatile* or *essential oils*. Another division would be into *vegetable oils*, by far the most numerous, and *animal oils;* and as a third popular division, the *mineral oils* (petroleum, naphtha). The fat or fixed oils are subdivided into the *drying* and the *non-drying oils*. The former class includes all oils which thicken when exposed to the air, through the absorption of oxygen, and are converted thereby into varnish, as, for example, linseed, nut, poppy and hempseed oil. All the drying oils are of vegetable origin. The *non-drying* oils (which are partly of vegetable, partly of animal origin) when exposed to the air also undergo a change resulting in the formation of acrid, disagreeably-smelling, acid substances, but though they thicken they do not become dry. The fixed vegetable oils (whether drying or non-drying) are generally prepared by subjecting the seeds of the plant to pressure, with or without heat, and they may also be extracted by means of certain solvents. The animal oils are, for the most part, the fluid parts of the fat of the animal, and are separated by heat alone. Vegetable fixed oils all consist of one or more proximate principles. Thus, olive-oil contains chiefly olein, with a little stearin; linseed-oil is composed mainly of linolein. The most important of the drying oils are linseed, hemp, walnut, poppy, candle-nut, sesame, sunflower, madia, saf-flower. Of the non-drying oils the chief are olive, cotton-seed, colza, rape, ground-nut, castor, croton, etc. A certain number of these oils are also known as vegetable fats, from their consistency at ordinary temperatures, such as palm-oil, cocoa-nut oil, shea-butter. The animal oils comprise neat's-foot oil, train-oil, sperm-oil, porpoise-oil, cod-liver oil, shark-oil, etc. The uses of the fixed oils are very various. Many are used as articles of food, others are used in medicine, numbers as lubricants, some in the composition of paints and varnishes; some are important sources of artificial light, and generally when acted on by an alkali they form soaps. A use of oil now coming into some importance is as an agent for calming the waves of the sea in certain circumstances, more especially to prevent them from breaking over a boat and so swamping her. That oil has this effect has been clearly demonstrated

and has been actually tested in violent storms in mid-ocean.

Volatile oils are generally obtained by distilling the vegetables which afford them with water; they are acrid, caustic, aromatic and limpid; they are mostly soluble in alcohol, forming essences. They boil at a temperature considerably above that of boiling water, some of them undergoing partial decomposition. A few of them are hydro-carbons; the greater number, however, contain oxygen as one of their ultimate elements. They are chiefly used in medicine and perfumery; and a few of them are extensively employed in the arts as vehicles for colors, and in the manufacture of varnishes, especially oil of turpentine. They are very numerous, among them being the oils of anise, bergamot, clove, cinnamon, cajeput, lavender, lemon, lime, orange, mint, peppermint, nutmeg, marjoram, rosemary, thyme, etc.

Oil-tree, a name for several trees, especially the *Ricĭnus communis*, from the seeds of which castor-oil is expressed; and an Indian tree, *Bassia longifolia*, from the seeds of which a thick oil is expressed, which the Hindus use for their lamps, for soap, and for cooking.

Oil-wells, wells sunk for the outflow of petroleum from its underground reservoirs. These consist of pipes driven into the ground to a depth of several hundred feet, and in some cases several thousand feet. Through these the oil flows to the surface, at times with such force as to be projected several hundred feet into the air and to make surface lakes of petroleum. The upward flow of oil may last for months or years, pumping being resorted to when the expulsive force ceases. Some wells have yielded oil at a depth of 200 feet, but one sunk in Silesia, Austria, went to a depth of 6568 feet. There are probably 100,000 of such wells in the various oil regions of the earth.

Oise (wäz), a river in France, which rises in the province of Hainaut in Belgium, among the Ardennes, flows southwest across the department of Aisne-et-Oise, and joins the Seine on its right bank about 6 miles below Pontoise; total course, about 180 miles, of which 100 miles, beginning some distance below Chauny, are navigable.

Oise, a northern department in France, bounded by the departments of Somme, Seine-Inférieure, Eure, Seine-et-Oise, Seine-et-Marne and Aisne; area, 2261 sq. miles. A considerable part of the soil is a strong clay, well adapted for wheat; but barley, oats and rye are considered the most profitable crops, and a great number of cattle are raised. Pop. (1906) 410,049.

Oka (å-kä′), the name of two rivers, one in European and the other in Asiatic Russia. The former, rising in the government of Orel, joins the Volga at Nijni-Novgorod. The latter, rising in the mountains between China and the government of Irkutsk, flows N. N. E. for 400 miles, and joins the left bank of the Angara at Bratsk.

Okapi (ō-kä′pi), a new species of African animal first brought to notice by Sir H. H. Johnston in 1899, he having obtained the skin of the animal from Mr. K. Erikssen, a Swedish officer in the Congo Free State. This new mammal is about the size of an ox, and is a cloven-footed ruminant, with characteristics approaching both the giraffe and the zebra, but distinct from each. It is about 4½ feet high at the withers. The cheeks

Okapi (*Okapia johnstoni*).

and jaws are yellowish-white, the ears, forehead, a line down to the muzzle and the short and thick neck are a deep chestnut fringed with black. The colors of shoulders and body range in tone from sepia and jet black to red; the belly is blackish, the tail chestnut with a small black tuft. Zebra-like hindquarters and legs are either snow white or pale cream touched here and there with orange and marked with purple-black horizontal stripes and blotches. In 1906, the Alexander Gosling expedition obtained the skin of another okapi and were the first whites to see the living animal in its forest habitat on the Semliki River, Central Africa.

Okeechobee Lake (o-kē-chō′bē) ('Big Water'), a large shallow lake in Southern Florida; about 40 miles in length by 25 in breadth,

and with a maximum depth of 12 feet. Its waters are discharged through the Everglades, but there is no appreciable outlet stream. It contains a few low islands, and a drainage company has been reclaiming since 1881.

Oklahoma (ok-lȧ-hō-mȧ), a State of the American Union, bounded N. by Kansas, E. by Arkansas and Missouri, and S. and W. by Texas; area, 70,057 sq. miles. It comprises the original Indian Territory, out of the western section of which a territory known as Oklahoma was organized in 1890. To this was added a narrow strip of land north of the 'Texas Panhandle,' known as the 'Public Land Strip' or colloquially as 'No Man's Land,' it having remained unappropriated. The new territory was rapidly settled and its people asked for statehood in 1901. The question as to whether Oklahoma and Indian Territory should be admitted as separate States, or combined and admitted as a single State, was settled in 1906, when they were admitted as one State under the name of Oklahoma, the constitution of the new State being signed by President Roosevelt, November 16, 1907. The surface is generally rolling prairie, with plentiful timber in the eastern part. Here a great belt of forest, known as the 'Cross Timbers,' extends from the Arkansas River to the Brazos in Texas. In the south are the Wichita Mountains, connecting the east with the Ozark Mountains of Arkansas. The central part is occupied by the Chautauqua Mountains. The rivers include the Arkansas, with its affluents, the Canadian, the Cimarron, and others, and the Red River, which forms the southern boundary, separating Oklahoma from Texas. The land is generally fertile and agriculture is the principal occupation of the people, wheat being the chief crop. Corn also is largely grown and over a rapidly increasing area. Other profitable crops are cotton, oats, alfalfa, barley, broom corn and Kaffir corn. Hay and fruit of excellent quality are raised in considerable quantities. The wealth of summer forage and the abundant pasturage which wheat affords during the winter make the production of live stock of all kinds very profitable. Limestone, gypsum and good building-stone are plentiful. Large quantities of flour are made, much of it being shipped to other states. There are many cotton-seed mills, the meal and hulls being fed to large numbers of cattle. Capital Guthrie. Pop. (1910) 1,657,155.

Oklahoma City, a city, capital of Oklahoma Co., Oklahoma, 31 miles S. of Guthrie. Its industries include oil mills, compresses, machine shops, and a large meat-packing plant. Epworth University is located here. Pop. 64,205.

Okhotsk (o-*h*otsk') SEA OF, an inlet of the North Pacific Ocean, bounded on the north by Russian Siberia, east by Kamtchatka, partly enclosed by the Kurile Islands on south and Saghalien on west. It is connected with the Sea of Japan by the Gulf of Tatary and La Pérouse Strait.

Olaf (ō'laf), or ST. OLAF, one of the most celebrated of the Norwegian kings, great-greatgrandson of Harald Haarfager, and son of Harald, chief of the district of Gränland, was born about 995. He was a friend of the Normans, and fought as an ally of Ethelred's in England. He afterwards established himself on the throne of Norway, and was a zealous supporter of Christianity. Canute the Great having landed in Norway with an army, Olaf fled to Russia, and in attempting to recover his dominions he was defeated and slain at the battle of Stiklestad (1030). Since 1164 he has been honored as the patron saint of Norway. The order of St. Olaf, a Norwegian order given in reward for services rendered to king and country or to art and science, was founded in 1847.

Oland. See *Oeland.*

Olbers (ol'bėrz), HEINRICH WILHELM MATTHÆUS, a German astronomer, born in 1758; died in 1840. He studied medicine in Göttingen, and practiced in Bremen. Astronomy, however, became the ruling passion of his life. He directed his attention particularly to comets, and besides furnishing the most complete lists of the comets whose course had been calculated, in 1815 he discovered a new one, which bears his name. Another discovery for which he is still better known is that of two minor planets, Pallas in 1802, and Vesta in 1807.

Oldbury (ōld'bė-ri), a town of England, in the county of Worcester, in the heart of a mining district, 5 miles W. N. W. of Birmingham. It has manufactures of chemicals, iron and steel works, edge-tool and nail works, brick and tile works, limestone quarries, and extensive iron and coal mines. Pop. 32,240.

Oldcastle (ōld'kas-tl), SIR JOHN, Lord Cobham, was born in the fourteenth century, in the reign of Edward III, and obtained his peerage by marrying the daughter of Lord Cobham. He excited the resentment of the clergy by his zealous adherence to the doctrines of Wickliffe, whose works he collected,

100°
99°
98°
97°
96°
95°
A
B
C
D
E
F
37
36
35
34
1
2
3
4
KANSAS
OKLAHOMA
TEXAS
MISSOURI
ARKANSAS
Enid
Stillwater
Tulsa
Ponca
Pawnee
GUTHRIE
El Reno
Oklahoma
Shawnee
Chickasha
Holdenville
Ardmore
Durant
Lawton
Duncan
Hobart
Aradarko
Coalgate
McAlester
Wilburton
Muskogee
Wagoner
Okmulgee
Fort Gibson
Vinita
Miami
Afton
Grove
Pryor Creek
Claremore
Sapulpa
Kingfisher
Watonga
Cimarron R.
Canadian R.
Red R.
Arkansas R.
Grand R.
Little R.
Scale of Miles
0 10 20 40
98° Longitude C West 97 from D Greenwich 96°
WESTERN PORTION OF OKLAHOMA
COLO
KAN.
N. M.
TEXAS
Cimarron R.
Garrett
Hooker
Coln
Gate
Kenton
Optima
Hardesty
Beaver
Mineral
Guymon
Grand Valley
Lockwood
103°
102°
101°
100°

transcribed, and distributed among the people. Under Henry V he was accused of heresy; but the king, with whom he was a favorite, delayed the prosecutions against him, and tried to convince him of his alleged errors, but in vain. He was then cited before the Archbishop of Canterbury (1413), condemned as a heretic, and committed to the Tower, whence he escaped into Wales. Four years afterwards he was retaken and burned alive in St. Giles' Fields (Dec. 1417). He wrote *Twelve Conclusions*, addressed to the parliament of England.

Old Catholics, the name first assumed by a party in the Church of Rome who, led by Dr. Döllinger, professor of ecclesiastical history at Munich, refused to accept the decree of the Vatican Council of 1870, teaching and defining the universal jurisdiction and personal infallibility of the pope. Though united in protesting against the new dogma, they claim to be faithful to the ancient traditional constitution of the church; have never seceded from it, and still hold they have a joint interest in its possessions. The chief centers of the Old Catholic movement were the universities of Germany; but the movement was also set going in Switzerland, where it spread rapidly and widely. At the first Old Catholic congress, held at Munich, September, 1871, it was determined to form separate congregations for the body, and to enter into a close connection with the Church of Utrecht (the so-called Dutch Jansenists). (See *Jansenists.*) After this the Old Catholic movement spread more rapidly. At their second congress, held at Gürzenich in 1872, the Old Catholics resolved to elect Dr. Joseph Reinkens as their first bishop. At the third congress, held in 1873 at Constance, a synodal constitution was adopted. Yearly congresses have since been held, and in 1878 it was resolved that celibacy was not incumbent on priests. The Old Catholic movement in Germany was greatly aided from the first by the position taken up by the imperial government, and still more by the governments of some of the separate states. The imperial government declared the right of Old Catholics to retain what offices they held, and the emoluments of these offices, in spite of any sentence of excommunication passed on them by their bishops. The Old Catholic movement has had a similar course in Switzerland. There also the bishops unanimously supported the new dogma, and excommunicated the priests who rejected it; but there also the state intervened, and zealously protected the latter. At present the Old Catholics of Switzerland number about 80,000, and have a bishop residing at Bern. Those of Germany number 70,000 (their bishop residing at Bonn), while the movement has spread to some extent in France and Austria.

Oldenburg (ōld'en-burg), a grand-duchy in the north of Germany, consisting of three separate and distinct territories, viz., the Duchy of Oldenburg, the principality of Lübeck, and the principality of Birkenfeld; total area, 2479 square miles. (1) The first of these divisions, the Duchy of Oldenburg, is bounded on the north by the German Ocean, and on the other three sides by Hanover and Bremen. The country is flat; the soil marshy and sandy, with little cultivation and large tracts of heath and forest; there are no hills or lakes; the principal river is the Weser, and the internal navigation is facilitated by a new canal, which connects the Hunte and the Ems. The chief crops are wheat, oats, rye, hemp and rape. Stock breeding is extensively carried on, and there are industries connected with cotton, wool, jute, etc. (2) The principality of Lübeck, situated in East Holstein, north of the town of Lübeck, is bounded partly by the Baltic; area, 210 square miles, of which the greater part is cultivated. Chief town Eutin (pop. 4574). (3) The principality of Birkenfeld, situated in Rhenish Prussia, is a hilly country with fertile valleys; area, 194 miles; the chief towns Birkenfeld and Oberstein. Oldenburg was raised to the dignity of a grandduchy by the Congress of Vienna in 1815, and the greater part of the two principalities added to it. Pop. (1905) 438,856.

Oldenburg, a town of Germany, capital of the grand-duchy of same name, 24 miles W. N. W. of Bremen, on the Hunte (which is navigable). It has fine promenades on the site of the old fortifications, a grand-ducal palace, public library of 150,000 volumes, picture gallery, and gymnasium, manufactures of glass, leather, earthenware, etc. Pop. 28,565.

Old Forge, a borough of Lackawanna Co., Pennsylvania, 4 miles S. W. of Scranton. Coal is mined here and there are silk mills. Pop. 11,324.

Oldham (ōld'am), a town of England, in Lancashire, 6 miles north-east of Manchester. It is very irregularly built, and cannot boast much of its public buildings, though it has a handsome and commodious town hall, lyceum and science and art school, free library and museum, etc. The spinning and weaving of cotton are the staple industries of the town, and employ within it and in its vicinity about

250 mills; and there are several large machine shops, foundries, tanneries, roperies, silk factories, bleach works, etc. Pop. 147,495.

Oldhamia (ōld-hā′mi-a), a fossil organism found in the Lower Cambrian rocks of Wicklow, from its branching form thought by some to be a plant, but by others ranked among the Polyzoa.

Old Red Sandstone, a geological term made popular by the writings of Hugh Miller, and applied by him to the red sandstone which underlies the carboniferous system, in contradistinction to the new red sandstone, which overlies the latter. It is now generally included in the Devonian System. See *Geology.*

Old Tom, a variety of gin manufactured in England.

Oldtown, a village of Penobscot Co., Maine, on the Penobscot River, 12 miles N. N. E. of Bangor. It has extensive water power and large lumber industries, also boots and shoes, woolens, etc. Pop. 6317.

Oldys (ōl′dis), WILLIAM, bibliographer, born according to some in 1687, according to others in 1696; died in 1761. He was appointed librarian to the Earl of Oxford, remained ten years in this nobleman's service, and in 1755 was appointed Norroy king-at-arms by the Duke of Norfolk. The works by which he is best known are the British Librarian, a bibliographical treatise, and a *Life of Sir Walter Raleigh*, prefixed to his *History of the World* (1738).

Oleaceæ (ō-le-ā′se-ē), a nat. order of monopetalous exogenous plants, allied to and sometimes united with Jasminaceæ, and chiefly inhabiting temperate climates. The species best known are the olive, lilac and privet.

Olean (ō-lē-an′), a city of Cattaraugus Co., New York, on the Allegheny River, 70 miles S. E. of Buffalo. It has oil and lumber industries, and manufactures of machinery, boilers, etc. Here is a State armory. Pop. 14,743.

Oleander (ō-lē-an′dėr), a plant of the nat. order Apocynaceæ, genus *Nerium*, the *N. Oleander*, known also by the name of rose-bay, a beautiful evergreen shrub, with flowers in clusters, of a fine rose or white color but of an indifferent odor. The plant, especially the bark of the root, is medicinal and to some extent poisonous.

Oleaster (ō-lē-as′tėr), *Elæagnus hortensis* (order Elæagnaceæ), also called wild olive tree, a small tree of the south of Europe and west of Asia, often cultivated in gardens and shrubberies for its blossoms, which are very fragrant. It flowers in May.

Olefiant Gas (ō-lē′fi-ant), the name originally given to ethylene or heavy carburetted hydrogen. It is a compound of carbon and hydrogen in the proportion expressed by the formula C_2H_4, and is obtained by heating a mixture of two measures of sulphuric acid and one of alcohol. It was discovered in 1796. It is colorless, tasteless and combustible, and has an aromatic odor not unlike that of oil of caraway.

Oleic Acid (ō-lē′ik), ($C_{18}H_{34}O_2$), an acid resulting from the action of olive and some other oils upon potash. It enters largely into the composition of soaps, forming with potash soft soap and with soda hard soap.

Olenek (å-lye-nyok′), a river of Northern Siberia which rises under the polar circle, and enters the Arctic Ocean to the west of the Lena delta; length, about 1200 miles.

Oleomargarine (ō-lē-ō-mär′ga-rin), an artificial butter. See *Margarine.*

Oléron (ō-lā-rōṇ), an island of Western France, about 1 mile from the coast of the department of Charente-Inférieure, to which it belongs. Greatest length, 18 miles; greatest breadth, 7 miles; area, 96 square miles. With the exception of the west side the surface is generally fertile, producing good corn and wine. It has two towns, Château and St. Pierre, the former fortified. Pop. 17,033. —What are known as the laws of Oléron were a code of maritime laws which long regulated the navigation connected with La Rochelle, Bordeaux, and the coasts of Normandy and Brittany, and were also adopted in other countries, as Spain, the Netherlands and England. These laws were compiled about the end of the eleventh or the beginning of the twelfth century.

Olfactory Nerves (ol-fak′tu-ri), the nerves of smell, the first pair of cerebral nerves or nerves from the brain. They arise chiefly in connection with the cerebral hemispheres, and numerous filaments from them, perforating the ethmoid bone, are distributed over the mucous membrane of the nose. See *Nose.*

Olhão (ol-yä′ụṇ), a seaport of Portugal, province Algarve. It is actively engaged in fisheries. Pop. 10,009.

Oli′aros. See *Antiparos.*

Olibanum (ō-lib′a-num), a gum resin used as incense, and obtained from the tree *Boswellia serrāta.* It is yellow of color, bitter in taste, and

diffuses an aromatic odor when burned. See *Frankincense.*

Olifant River. See *Elephant River.*

Oligarchy (ol′i-gär-ki; from Gr. *oligos*, few, and *archē*, government), that form of government in which the supreme power is placed in the hands of a small exclusive class.

Oligocene (ol′i-gō-sēn), a geological system of the Tertiary age, lying between the Eocene and Miocene systems, and formerly included in these. Its strata is widely distributed and rich in fossils, largely composed of modern genera, though with many strange mammalian forms.

Oligoclase (ol′i-gō-klās), a soda lime felspar, the soda predominating; it occurs in granite, porphyry, and other igneous rocks.

Olinda (ō-lēn′da), a seaport town of Brazil, in the province of Pernambuco, on the Atlantic, 3 miles north of Recife, with which it unites in forming what is commonly called the city of Pernambuco. Pop. 8000.

Oliphant (ol′i-fant), LAURENCE, son of Sir Anthony Oliphant, chief-justice of Ceylon, was born in England in 1829; died in 1888. He studied law at the University of Edinburgh, traveled extensively in Southern Russia and the Crimea; became private secretary to Lord Elgin when he was governor-general of Canada, and subsequently accompanied him (1857) on his mission to China and Japan. Returning to Europe he became Paris correspondent to the *Times;* entered parliament for the Stirling Burghs in 1865, but retired three years later; and, after his attempt to found a Socialistic religious community in Portland, New York, had failed, he resided principally in Palestine, near Mount Carmel. Besides frequent contributions to periodical literature he published *Journey to Khatmandu, The Russian Shores of the Black Sea, Minnesota and the Far West, The Transcaucasian Campaign of Omer Pasha,* and various other works, including *Altiora Peto* (a novel), *Masollam* (a novel), *Sympneumata* and *Scientific Religion,* the last works exhibiting his peculiar mysticism and tendency to spiritualism. These mystical views led him in later life, in common with his mother, Lady Oliphant, to join the ascetic community of the American mystic, Thomas Lake Harris. He died in 1888.

Oliphant, MRS. MARGARET, maiden name Wilson, novelist; born near Musselburgh, Scotland, in 1820. Her first work of fiction appeared in 1849 under the title of *Passages in the Life of Mrs. Margaret Maitland,* and from that time she maintained a high place as a novelist by such works as *Adam Graeme, The Chronicles of Carlingford,* etc. Besides this fictional work she wrote a *Life of Edward Irving,* a *Life of Francis of Assisi, Memoir of Count Montalembert,* biographies of Molière, Cervantes and Sheridan, *Historical Sketches of the Reign of George II, The Makers of Florence, The Makers of Venice,* a *Literary History of England* and a *Memoir of Principal Tulloch.* She died in 1897.

Oliva (ō-lē′vä), a village in Prussia, in the province of East Prussia, not far from Dantzig. In a Cistercian abbey in this village a peace was concluded, May 3, 1660, which terminated the war between Sweden, Poland, the emperor, and Brandenburg. Pop. 5682.

Olivarez (o-le-vä′reth), GASPAR DE GUZMAN, COUNT OF, Spanish statesman, born in 1587; died in 1645. He was educated at the University of Salamanca, afterwards appointed gentleman of the bedchamber to the Prince of Asturias, and when his royal master succeeded to the throne as Philip IV, Olivarez was appointed prime minister. For twenty-two years (1621-43) his power was almost unlimited, but the severity of his administration ultimately caused revolt in Catalonia and Andalusia, while the Portuguese threw off the Spanish yoke. The end of his policy was public discontent and his own private disgrace. He was confined by the king at Toro, where he died.

Olive (ol′iv), a fruit tree of which there are several species, the most important being the common olive (*Olea europæa*, nat. order Oleaceæ). It is a low branching evergreen tree, in height from 20 to 30 feet, with stiff narrow dusky-green or bluish leaves. The flowers are small and white, and are produced in axillary racemes, and appear in June, July and August. The fruit is a berried drupe of an oblong spheroidal form, with a thin, smooth, and usually blackish skin, containing a greenish soft pulp adherent to a rough, oblong, and very hard stone. It is bitter and nauseous, but replete with a bland oil. The olive is a native of Syria and other Asiatic countries, and flourishes only in warm and comparatively dry parts of the world. It grows slowly, and is very long-lived. The olive tree has in all ages been held in peculiar estimation. It was anciently sacred to Minerva. Olive wreaths were used by the Greeks and Romans to crown the brows of victors, and it is still universally regarded as an emblem of peace. The wood of the olive

tree is beautifully veined, and has an agreeable smell. It is in great esteem with cabinet-makers on account of the fine polish of which it is susceptible. But the olive tree is principally cultivated for the sake of its oil, which is contained in the pericarp or pulp. (See *Olive-oil.*) It is cultivated for this purpose in Italy, France, Spain, Malta, Turkey, the Ionian Islands, California, Florida, etc., and easily propagated either by seed, grafting, or slips. It is very tenacious of life. The fruits are also used at table, not in the natural state, but generally pickled, the green unripe fruits being deprived of part of their bitterness by soaking them in

Olive (*Olea europæa*).

water, and then preserved in an aromatized solution of salt. Another species of olive, the *O. fragrans*, inhabits China, Japan and Cochin-China. The flowers are used by the Chinese to mix with and perfume their tea, and also, together with the leaves, for adulterating tea. The only American species (*O. americāna*) is in some districts called *devil-wood*, on account of the excessive hardness of the wood and the extreme difficulty of splitting it.

Olivenza (ō-lē-vān'tha), a town of Spain, province of Badajoz, on the left bank of the Guadiana, 15 miles south of the town of Badajoz. Pop. 9066.

Olive-oil, a fixed oil obtained by expression from the pulp of the ripe fruit of the olive (*Olea europæa*). It is an insipid, inodorous, pale-yellow or greenish-yellow, viscid fluid, unctuous to the feel, inflammable, incapable of combining with water, and nearly insoluble in alcohol. It is the lightest of all the fixed oils. Olive-oil is much used as an article of food in the countries in which it is produced, and to a smaller extent in other countries, to which it is exported also for medicinal and manufacturing purposes, etc. The best olive-oil is said to be made in the vicinity of Aix, in France; the kind known by the name of Florence oil is also of a superior quality, and is mostly used for culinary purposes. By far the largest portion of olive-oil brought to the United States is imported from Italy. Spain also sends a large quantity. The oil is also known as *Sweet-oil.*

Olives, Mount of, or Mount Olivet, a hill on the east side of Jerusalem, from which it is separated by the Valley of Jehoshaphat and the brook Kedron. The principal summit has the name of Mount of Ascension, and here stands the modern Armenian church of that name. But according to the Scripture the scene of the ascension was near to Bethany (Luke xxiv, 50), which is on the further side of the hill from Jerusalem. A short way above Bethany is a nearly flat part of the hill on which hundreds of people might congregate, and there is little doubt that that is truly the place from which our Lord ascended. At the foot of the hill lay the Garden of Gethsemane, and round its eastern and southern side is the road by which our Lord made his triumphal entry into Jerusalem.

Olivetans (o-liv'e-tanz), an order of Benedictine monks and nuns founded about the beginning of the fourteenth century by Tolomei of Siena in Italy, and named from Monte Oliveto Maggiore near that city, where their first monastery was erected.

Olivine (ol'i-vēn), called also *chrysolite*, is a mineral, olive-green in color, occurring in lava, basalt, and certain meteorites. Analysis proves it to be silicate of iron and magnesium, agreeing with the general formula $(Mg. Fe)_2SiO_4$.

Olla Podrida (ol'a pō-drē'da), the name of a favorite dish with all classes in Spain. It consists of a mixture of all kinds of meat cut into small pieces, and stewed with various kinds of vegetables. Hence the term is also applied to any incongruous mixture or miscellaneous collection.

Ollivier (o-liv-i-ā), Emile, born at Marseilles in 1825; studied for the bar and became an advocate at Paris in 1847; took part in the revolution of 1848, and was appointed commissary-general at Marseilles under the republic. He afterwards entered the legis-

lative assembly, where he became one of the leaders of the Liberal opposition. When the empire was established in France Ollivier gradually severed himself from his former political associates, and the severance was final when he, in January, 1870, accepted the invitation of Napoleon III to form a ministry. It was this ministry which declared war with Germany in July, 1870, and which, as a result of the repeated French disasters, was overthrown with disgrace in August, 1870.

Olmsted (olm'sted), FREDERICK LAW, landscape architect, was born at Hartford, Connecticut, in 1822; died in 1903. With Calvert Vaux he prepared the design for Central Park, New York. He was consulted about the park systems of Boston, Chicago, Buffalo and other cities, the United States Capitol grounds, and the grounds of the World's Columbian Exposition at Chicago. His son, of the same name, born in 1870, has been prominent in work of the same nature and is landscape artist of the park system of Boston.

Olmütz (ol'mŭts), a city of Austria, in Moravia, 38 miles northeast of Brünn, on the March, which forms almost a complete circle around it. It has a cathedral, a fine Gothic building erected by King Wenzel III, who was murdered here in 1306; and its manufactures are chiefly of linen and woolen cloth. Olmütz was formerly the capital of Moravia, and is still the see of an archbishop. Pop. 21,933.

Olney (ol'ni), RICHARD, lawyer, born at Oxford, Massachusetts, in 1838. He became a prominent lawyer in Boston, in 1893 was appointed Attorney-general by President Cleveland, and in 1895 Secretary of State. He was active in settling the Venezuela boundary question in 1896.

Olney (ol'ni), a city, the capital of Richland County, Illinois, 53 miles S. of Mattoon. It has foundries and machine shops, flour mills, railroad shops, etc. Pop. 5011.

Olonets (o-lō'nyets), a northern government of Russia; area, 57,439 square miles. The surface is generally flat; the drainage is shared in unequal proportions between the Baltic, White Sea, and Volga. The most marked natural feature of the government is its lakes (of which Omega is one), streams, and morasses. The climate is rigorous in the extreme. Timber constitutes almost the whole wealth of the government. The chief means of support of the inhabitants are forestry, hunting and fishing. The capital is Petrozavodsk. Pop. 401,100.

Oloron (ō-lō-roṇ), a town of France, department of Basses-Pyrénées, 14 miles southwest of Pau, on a hill near the Gave, here crossed by a lofty bridge connecting Oloron with Sainte Marie. It has manufactures of cutlery, blankets, etc. Pop. 7482.

Olot (ō-lōt'), a town of Spain, in Catalonia, province of Gerona, 55 miles north of Barcelona, in a basin nearly enclosed by a circle of volcanic hills. There are cotton and woolen manufactories, tanneries, etc. Pop. 8017.

Ols. See *Oels*.

Olympia (ō-lim'pi-a), county seat of Thurston County, Washington, and capital of the State, is situated at the southern extremity of Puget Sound, 45 miles S. W. of Seattle. It has abundant water-power and extensive lumber and wood-working mills; also a productive oyster industry. In the vicinity are magnificent forests of fir. Pop. 6996.

Olympia, a locality in Greece, the scene of the famous Olympic games, a beautiful valley or plain lying in the middle portion of the ancient district of Elis, in the western part of the Peloponnesus (Morea). Here were collected thousands of statues of the gods and of victors in the games, treasure houses full of votive offerings, temples, altars, tombs, and in a word the most precious treasures of Grecian art. Among the buildings were the Olympiēum or great temple of Zeus, containing the colossal statue of the god by Phidias; the Heræum or temple of Hera; the Metroum or temple of the mother of the gods; the twelve treasure houses; the Prytanēum, in which the Olympic victors dined after the contests; the Bouleuterion, in which all the regulations regarding the games were made; and these were all surrounded with walls, having a length of about 1800 feet and a breadth of 1500. Recent excavations have brought to light numerous valuable fragments of sculpture, bronzes, coins, terra cottas, etc.

Olympiads (ō-lim'pi-adz), the periods of four years between each celebration of the Olympic games, by which Greeks computed time from 776 B.C., the first year of the first Olympiad, till 394 A.D., the second year of the 293d Olympiad.

Olympias (ō-lim'pi-as), the wife of Philip II, king of Macedonia, and the mother of Alexander the Great. Her haughtiness, and more probably her infidelity, led Philip to repudiate her, and to marry Cleopatra, the niece of King Attalus. The murder of Philip, which soon followed this disgrace (B.C.

336), some have attributed to the intrigues of Olympias. After the death of her son and his successor, Antipater, she was besieged by Cassander in Pydna, and, having to surrender, she was put to death after a mock trial (316 B.C.).

Olympic Games (ō-lim′pik), the great national festival of the ancient Greeks, celebrated at intervals of four years in honor of Zeus, the father of the gods, on the plain of Olympia (which see). The festival commenced with sacrifices, followed by contests in racing (foot, horse, chariot), wrestling, boxing, etc.; and closed on the fifth day with processions, sacrifices, and banquets to the victors. The victors by way of prize were merely crowned with garlands of wild olives; and on their return home they were received with extraordinary distinction, and were rewarded with numerous honors and privileges.

Olympus (ō-lim′pus), the name given to several mountain ranges by the ancients. The most celebrated of them was situated in Thessaly, at the eastern extremity of the range called the Cambunian Mountains, and now called by the Greeks Elymbos or Olymbos. It rises to the height of 9700 feet above the level of the sea, and was the highest mountain in ancient Greece. The earliest Greeks looked upon it as the highest of all mountains, as the central point of the earth's surface, and as the place where the gods dwelt. In after-times, when the ideas of men respecting the universe and the gods were enlarged, the supreme beings were said to reside in the exterior sphere of the heavens, revolving round the space which embraced the planets; and this new abode of the gods above the firmament of heaven received the name of Olympus. The other most important elevation bearing this name was the Mysian Olympus, a range of lofty mountains in the northwest of Asia Minor.

Olyphant (ol′i-fant), a borough of Lackawanna County, Pennsylvania, about 8 miles N. N. E. of Scranton and 8 miles from Carbondale. It is a coal-mining town. Pop. 8505.

Om (ōm), a mystic word to which great sanctity is attached both by the Brahmans and the Buddhists.

Omagh (ō-mä′), the county town of Tyrone, Ireland, situated on the Strule, 34 miles S. E. of Londonderry. There are flax and corn mills, and a trade in leather. Pop. 4789.

Omaha (ō′ma-ha), a city of Nebraska, the seat of Douglas County, situated on the Missouri, opposite Council Bluffs, Iowa, about 600 miles from its confluence with the Mississippi and 492 miles west of Chicago. It is an important railway center for the northwest, and is the commercial and manufacturing metropolis of the State. It possesses the largest silver-smelting works in the country; steam engine and boiler works, soap-works, breweries, etc., and it is the center of a large mining and agricultural district. It has also extensive car shops, and very important cattle, hog and sheep packing industries, it being the third 'packing' city of the United States. It has important public and private public buildings and various educational institutions, and it is the headquarters of the military department of the Missouri. Pop. 124,096.

Oman (o-män′), or MUSKAT, a sultanate in the southeast of Arabia, partly on the Persian Gulf, partly on the Indian Ocean; area, estimated at 82,000 square miles. The chief features of the country are stretches of barren sand or rock, mountains reaching the height of 10,000 feet; fertile valleys and plains, yielding abundance of grain, sugar, fruits, cotton, coffee, etc., Oman being the richest part of the Arabian peninsula both in agricultural products and in mineral treasures. The inhabitants are tolerant, but very superstitious and immoral. They are mostly Arabs, but there is a considerable mixture of Persians, Hindus, Africans, etc. The form of government is a monarchy (the ruler being styled Imam), limited by a powerful aristocracy with hereditary privileges, and the prescription of popular rights. Zanzibar and its dependencies formerly belonged to Oman. The capital is Muskat. Pop. (estimated) 1,000,000.

Omar I (ō′mår), successor of Abu-bekr, and second caliph of the Mussulmans after Mohammed. He was born about 582, became a follower of Mohammed about 615, and succeeded Abu-bekr in 634. His caliphate is celebrated for the great extension of Mohammedanism which took place while it lasted. In 638 the conquest of Syria was completed by his general Abu-Ubeida; his general, Amru, was equally successful in Egypt in 638 to 640; and when in 638 Jerusalem was compelled to surrender, Omar hastened thither himself in order to dictate the terms. Omar's generals likewise invaded Persia, defeated the army of Yezdegerd, and conquered the capital and kingdom. The Mussulmans pursued their conquests far into Africa, but Omar did not live long to enjoy his glory. In 644 he was mortally wounded at Medina by a Persian slave. He established the custom of dating from the Hejra.

Omar Khayyam (kī-yam′), a Persian poet, astronomer and mathematician, born at Nishapur in Khorasan; died there in 1123. His scientific works, which were of high value in their day, have been eclipsed by his *Rubaiyat*, a collection of about 500 epigrams in praise of wine, love, and pleasure, and at the same time depressingly pessimistic. A portion of the *Rubaiyat* was translated into English verse by Edward Fitzgerald (1859-79), and a critical text and translation was made by E. H. Whinfield in 1883. Other translations have been made and the work has become highly popular.

Omar Pasha. See *Omer Pasha.*

Omasum (ō-mā′sum), the third compartment of the stomach of ruminant mammals, otherwise known as the psalterium or 'manyplies.'

Ombay (ōm-bī′), an island in the Indian Archipelago, about 18 miles northwest of Timor. It is about 1500 square miles in extent, and is chiefly inhabited by Malays and Papuans. There is a Dutch settlement, with a trade in pepper, birds'-nests, etc.

Omega (ō-meg′a; Greek, signifying 'great *o*'), the name for the Greek long *o*. It was the last letter in the Greek alphabet, as alpha was the first; and from the expression in Revelation (chap. i, 8), 'I am Alpha and Omega, the beginning and the ending,' the signs A Ω became with the Christians symbolical hieroglyphics. Inscriptions on tombstones, public documents, etc., very often began with these two letters, meaning, 'In the name of God.'

Omens (ō′menz), certain signs or phenomena supposed to portend some impending good or evil fortune. Among the ancient Romans the taking of omens was a public institution of great importance. See *Augurs, Auspices.*

Omer (ō-mėr), St., a town in France, in the department of Pas-de-Calais, in a marshy district on the Aa, which is here navigable 23 miles southeast of Calais. It ranks as a fortress of the first class, and it has a fine cathedral, and remains of the abbey church of St. Bertin, at one time the noblest Gothic monument of French Flanders. It manufactures woolen cloth, thread, starch, etc., and has an important trade. Pop. 16,882.

Omer Pasha (o′mer pa-shạ′), a Turkish general, born in the Austrian dominions in 1806; died at Pera in 1871. Under his original name of Mikail Lattas he served for some time in an Austrian regiment; fled afterwards, for an unknown reason, into Bosnia; adopted the Mohammedan faith; taught writing in a military school; and ultimately became teacher to Prince Abdul-Medjid. When his pupil became sultan, Omer rapidly rose in rank; distinguished himself in the Syrian campaign of 1840; became military governor of Lebanon; quelled various revolts in Bosnia, Albania, etc.; and in the Russian campaign of 1853 he was appointed commander-in-chief of the Turkish army. In this capacity he made a successful stand against the Muscovite invasion, defeating the Russians at Kalafat on the Danube and at Eupatoria in the Crimea. He retired from public life in 1869.

Ommiades, or Ommeyades (om′i-ādz), the second dynasty which held the Arabian caliphate until they in turn were superseded by the Abbasides. The founder of the dynasty was Moawiyah, who claimed the throne after the death of Othman, his cousin, and became fully recognized as caliph after the death of Ali his rival and Hussein his son. See *Caliph.*

Omnibus (om′ni-bus), a Latin word signifying 'for all,' and now applied in several languages to the well-known vehicle used for the conveyance of passengers at a cheap rate. The first conveyances of the kind were those which came into use in Paris (March, 1662) in consequence of an edict of Louis XIV, but they soon fell into disuse, and were not again reintroduced until 1827. A Mr. Shillibur started the first omnibus in London in 1829, and they were introduced into New York in 1830, and Amsterdam in 1839. They have been superseded very generally by the street car.

Omphale (om′fa-lē), in ancient Greek legend, a queen of Lydia. Hercules was sold to her for a slave by Hermes (Mercury), and performed some remarkable exploits in her service. Omphalē governed with great severity, and was both licentious and cruel.

Omsk (omsk), a chief town in the Russian government of Akmolinsk, situated in Western Siberia at the junction of the Om with the Irtish, 280 miles southeast of Tobolsk. It is an important military station, contains a school for interpreters and a military school for the Cossacks, and has a good trade. Pop. 53,050, including many exiles.

On. See *Heliopolis.*

Onager (on′a-gėr), the wild ass (*Equus Asinus*), originally inhabiting the great deserts of Central Asia, and still found there in its wild state. See *Ass.*

Onagraceæ (on-a-grā′se-ē), a nat. order of polypetalous exogenous plants, herbs, trees and shrubs, with opposite or alternate simple leaves, and often handsome flowers. They have an inferior ovary, and all the parts of the flower are four or a constant multiple of that number. The species chiefly inhabit the more temperate parts of the world, and have white, yellow, or red flowers; such as the great American genus *Œnothēra* or evening primroses, the common wild willow-herbs (*Epilobium*), and the fuchsias of our gardens.

Onega (ō-nē′ga), a river in Russia, which, issuing from Lake Latcha, government of Olonetz, flows first northeast, then northwest, and after a course of about 270 miles falls into the White Sea at the southeast extremity of the Gulf of Onega.

Onega, a lake in Russia, near the center of the government of Olonetz, and, after Lake Ladoga, the largest lake in Europe, covering an area of about 3800 sq. miles. It has numerous creeks, bays and islands; is well supplied with fish; and discharges itself into Lake Ladoga by the Svir.

Oneglia (o-nel′yȧ), a seaport of North Italy, province of Porto Maurizio. Pop. 7357.

Oneida (ō-nī′da), a village of Madison Co., New York, on Oneida Creek, 26 miles E. of Syracuse. Large quantities of hops and dairy products are shipped, and there are knitting, planing, and flouring mills, iron manufactures, etc. Pop. 8317.

Oneida, a lake in the State of New York, the western and lower end of which is about 18 miles southeast of Lake Ontario. It is 20 miles long, 4 miles broad, and its waters find a vent by Oneida River into Lake Ontario at its southeast corner, after they have united with the Seneca and formed the Oswego River.

Oneida Community, a religious communistic society, otherwise known as Perfectionists (which see).

Oneidas, once a North American Indian tribe inhabiting Central New York, and belonging to the Iroquois community of tribes. A remnant in Wisconsin are well advanced in civilization.

Oneonta (ōn-ē-on′tȧ), a village of Otsego Co., New York, on the Susquehanna River, 60 miles N. E. of Binghamton. It has a State normal school, railroad shops, a silk mill, etc. Pop. 9491.

Onion (un′yun), a well-known liliaceous plant of the genus *Allium*, the *A. Cepa*, the bulbous root of which is much used as an article of food. It is a biennial herbaceous plant with long tubulated leaves, and a swelling, pithy stalk. The peculiar flavor varies much according to the size of the bulb, the small reddish onions having much more pungency than the larger ones. The onion may be grown from the tropics to the coldest verge of the temperate zone. There are at least twenty varieties, the Bermuda, Spanish and Portuguese being among the most esteemed.

Onkelos (onk′e-los), the author of the celebrated Targum or Chaldee paraphrase of the Pentateuch which bears his name, is asserted by the Babylonian Talmud to have lived in the time of the celebrated teacher Gamaliel, but is supposed from internal evidence to be not earlier than the second and not later than the third century. His version is so faithful, and accords so exactly with the Hebrew text, that it continued till the beginning of the sixteenth century to be chanted in the synagogue alternately with the Hebrew and to the same notes.

Onomacritos (on-o-mak′ri-tos), a Greek soothsayer and poet, who lived at Athens in the time of the Pisistratidæ, arranged and explained the so-called oracles of Musæus, and having been detected making an interpolation in one of these, was banished from Athens by Hipparchus about B.C. 516. He is supposed to have been the author of the Orphic hymns.

Onomasticon (on-a-mas′ti-kon), a Greek term properly meaning a list of names or words, denotes particularly a dictionary or encyclopædia in which individual subjects or things are mentioned and explained under their own names or head. The oldest work under this name still extant is that of Pollux, executed in the second century B.C., in the Greek tongue.

Onomatopœia (o-nom-a-to-pē′a), the formation of words in such a manner that the sound shall imitate the sense. Thus, in the case of sounds, the words *buzz*, *crash*, *roar*, are evidently formed to imitate the sounds themselves.

Onondagas (on-on-dā′gaz), a tribe of Indians, one of the Iroquois tribes, formerly occupied the region from Onondago Lake to Lake Ontario and southward to the Susquehanna River. The remnant of them, less than a thousand in number, are settled partly in Ontario and partly in New York.

Onosander (on-o-san′dėr), more correctly ONESANDER, a writer on military tactics who lived at Rome

in the middle of the first century after Christ, and composed in Greek, under the title of *Strategetikos*, an excellent work on the art of war.

Ontario (on-tā′ri-ō), formerly called Upper Canada and Canada West, a province of the Dominion of Canada, having on the northwest, north and east Manitoba, Kewatin, James Bay and Quebec; on the southeast, south and southwest the St. Lawrence River, the Great Lakes and Minnesota; area 219,650 sq. miles. Besides the great lakes just mentioned, which partly belong to the Dominion and partly to the United States, Ontario has numerous other lakes, such as Simcoe, Nipissing, Nipigon, and others. The chief rivers are boundary rivers; the Ottawa, Niagara and Albany, the latter entering James Bay, part of Hudson Bay. The Falls of Niagara in part belong to the province. There are no mountains of importance. Agriculture is the chief occupation, and for the most part the soil is of excellent quality. A large part of the province is covered with timber, and this, with the water facilities, makes lumbering one of the chief industries. The climate is inclined to the extreme of hot and cold during summer and winter respectively, but the dryness of the atmosphere makes it very healthy. The minerals include gold, silver, copper, iron, lead, nickel, plumbago, gypsum, marble, salt and petroleum. The richest, most thickly settled, and most highly cultivated portion of the province is the peninsula between the St. Lawrence and Lakes Ontario, Erie and Huron. Here very large crops of wheat are raised; also barley, oats, Indian corn and potatoes, and the fruit-growing farms of some districts yield a plentiful crop of apples, plums, pears, peaches and grapes. Recently the farmer here has turned his attention to stock-raising and dairy farming with encouraging results, which are largely due to the easy accessibility of markets by rail, supplemented by the lake, river and canal navigation. Chief among the manufactures are woolens, cotton, linen, hardware, paper, soap, agricultural implements, steam engines, etc. The educational system of the province provides for the free education of all children in the common schools, and there is also liberal government provision for high schools and colleges, technical institutions, and a university; while there are also colleges and universities not under provincial control. The government is administered at Toronto by a lieutenant governor, assisted by an executive council of seven; while there is also a legislative assembly, elected by ballot for four years, and constituting, with the lieutenant governor, the legislature or parliament. Pop. 2,523,208.

Ontario, Lake, the most easterly of the great lakes of North America, lying along the northeast side of the State of New York, and forming part of the boundary between the United States and Canada; greatest length, 190 miles; greatest breadth, about 55 miles; area, 5400 square miles. It receives the waters of Lake Erie by the Niagara, and discharges its waters by the St. Lawrence into the Atlantic, 1000 miles distant. The Hudson, and the Oswego and Erie canals, form a connection through the United States between it and the Atlantic. It is navigable throughout its whole extent and at all seasons. The most important places on its shores are Toronto, Hamilton, Kingston and Coburg, in Canada and Oswego in the United States.

Onteniente (ōn-tā-nē-ān′tā), a town of Spain, in the province of Valencia, 46 miles south of the town of Valencia. It has manufactures of textiles, paper, etc. Pop. 11,430.

Ontogenesis (on-tō-jen′e-sis), in biology, the history of the individual development of an organized being, as distinguished from *phylogenesis*, or the history of genealogical development, and from *biogenesis*, or life-development generally.

Ontology (on-tol′ō-ji), the doctrine of being; a name given to that part of the science of metaphysics which investigates and explains the nature and essence of all things or existences, their qualities and attributes. It is also used as equivalent to metaphysics.

Onyx (on′iks), a semi-pellucid gem with variously colored zones or veins. Any stone exhibiting layers of two or more colors strongly contrasted is called an onyx, as banded jasper, chalcedony, etc., but more particularly the latter when it is marked with white and stratified with opaque and translucent lines. The ancients valued it very highly, and used it much for cameos, many of the finest cameos in existence being of onyx.

Onyx Marble, a very beautiful translucent limestone of stalagmitic formation discovered by the French in the province of Oran, Algeria, and first brought into general notice at the London exhibition of 1862. It is used for the manufacture of ornamental articles.

Oojein. See *Ujjain.*

Oölite (ō′o-līt), a species of limestone composed of globules clustered

together, commonly without any visible cement or base. They vary in size from that of small pin-heads to that of peas. When the grains are very distinct and well-rounded it is called roe-stone; when they are large and pea-like the rock is known as pisolite, pea-grit, or pea-stone. What is known as the Oölite or Oölitic *series* of rocks in geology, consist of a series of strata comprehending the whole of those peculiar limestones, calcareous sandstones, marls, etc., which underlie the chalk formation and rest on the Lias. It yields in England a vast quantity of excellent freestone and ironstone, and is also interesting in the highest degree for its fossils, which are numerous, varied, and in excellent condition. The strata of the series have been arranged as *Upper Oölite*, *Middle Oölite* and *Lower Oölite*. The Oölite forms the upper division of the *Jurassic System*, so called because the range of the Jura Mountains is almost entirely composed of such limestones.

Oomrawatee. See *Amraoti*.

Oonalashka, or UNALASKA (ö-näläs'ka), one of the Aleutian Islands (which see).

Oost (ōst), JACOB VAN, the Elder, one of the best Flemish painters, born at Bruges in 1600; died in 1671. After laying the ground of his artistic education in his native land, he proceeded to Rome, and there became the pupil chiefly or Annibale Caracci. In his youth he was so successful a copyist of Rubens and Vandyck that his copies still deceive connoisseurs.—JACOB VAN OOST, the Younger, son of the preceding, born in 1637, studied at Paris and Rome, lived above forty years at Lille, and died at Bruges in 1713. His style is more marked, and his pencil is freer than that of his father.

Oosterhout (ō'stêr-hout), a town in Holland, in the province of North Brabant, 5 miles northeast of Breda. It has potteries, breweries, tanneries, corn mills, beet-sugar factory, and some trade in grain, cloth and timber. Pop. 11,545.

Ootacamund, or UTAKAMAND (ö-tåkå-mund'), a sanitary station in Southern Hindustan, and the summer headquarters of the Madras government, situated in the Neilgherry Hills, 70 miles south of Mysore. It is 7228 feet above the level of the sea, and lies in an amphitheater surrounded by noble hills overlooking an artificial lake nearly 1½ miles long. There are churches, hotels, schools, hospitals, public library, botanic gardens, etc. The mean temperature is about 58° Fahr. Pop. 18,596.

Ootrum (ö'trum), a soft, white, silky, and strong Indian fiber, regarded as a promising substitute for flax, derived from the stem of *Dœmia extensa*, a plant of the nat. order Asclepiadaceæ. It occurs abundantly in numerous parts of Hindustan.

Opah (o'pa), a large and beautiful sea-fish (*Lampris luna* or *guttātus*) of the dory family, a native of the Eastern seas, but found in the Atlantic and Arctic Oceans, and sometimes, though more rarely, on the British coasts. It is about 4½ feet long and weighs 140 to 150 lbs. Its colors are very rich, the upper part of the back and sides being green, reflecting both purple and gold, and passing into yellowish-green below, the fins bright vermilion. The flesh is highly esteemed.

Opal (ō'pal), a precious stone of various colors, which comes under the class of pellucid gems. It consists of silica with about 10 per cent. of water, and is very brittle. It is characterized by its iridescent reflection of light. It is found in many parts of Europe, especially in Hungary, in the East Indies, etc. The substance in which it is generally found is a ferruginous sandstone. There are many varieties or species, the chief of which are: (*a*) *precious* or *noble opal*, which exhibits brilliant and changeable reflections of green, blue, yellow and red; (*b*) *fire opal*, which simply affords a red reflection; (*c*) *common opal*, whose colors are white, green, yellow and red, but without the play of colors; (*d*) *semi-opal*, the varieties of which are more opaque than common opal; (*e*) *hydrophane*, which assumes a transparency only when thrown into water; (*f*) *hyalite*, which occurs in small globular and botryoidal forms, with a vitreous luster; (*g*) *menilite*, which occurs in irregular or reniform masses, and is opaque or slightly translucent. Formerly the opal was believed to possess magical virtues; thus it was believed to confer invisibility when wrapped in a bay-leaf.

Open-bill (*Anastŏmus lamelligĕrus*), an African bird of the stork family, so named from the odd formation of the beak, which at the anterior end exhibits a gap between the mandibles as if part of them were worn away though they meet at the points. Their chief food is molluscs, and perhaps this formation of bill has something to do with the opening of the shells. Another species inhabits the East Indies.

Openshaw (o'pen-shą), a town of Lancashire, England, which may be regarded as a suburb of Manchester. Pop. 16,153.

OPENING CEREMONIES, OPERA HOUSE, PARIS

One of the most brilliant scenes in Europe.

Opera (op′e-rà), a musical drama, that is, a dramatic composition set to music and sung on the stage, accompanied with musical instruments and enriched by the accessories of costumes, scenery, dancing, etc. The component parts of an opera are recitatives, solos, duets, trios, quartettes, choruses, etc., and they are usually preceded by an instrumental overture. The lighter kind of opera in Germany, England and the United States, as well as the French *opéra comique*, is of a mixed kind—partly spoken, partly sung. The chief varieties of opera are the *grand opera* or *opera seria*, the name given to that kind which is confined to music and singing, of which the recitative is a principal feature; the *romantic opera*, or *opera drammatica* of the Italians, embracing an admixture of the grave and lively; the *comic opera*, or *opera buffa;* as well as many intermediate varieties. Though the Greek dramas were operatic in character, the opera proper is of modern date and of Italian origin, and would seem to have developed naturally from the miracle-play of the middle ages, the first operas dating from the sixteenth century. About the close of this century the poet Rinuccini wrote a drama on the classical story of *Daphne*, which was set to music by Peri, the most celebrated musician of the age. The orchestra of this first opera consisted of four instruments, namely, a harpsichord, a harp, a viol di gamba, and a lute. There was no attempt at airs, and the recitative was merely a kind of measured intonation. Monteverde, a Milanese musician, improved the recitative by giving it more flow and expression; he set the opera of *Ariadne*, by Rinuccini, for the court of Mantua; and in the opera of *Giasone* (Jason), set by Cavalli and Cicognini, for the Venetians (1649), occur the first *airs* connected in sentiment and spirit with the dialogue. The first regular serious opera was performed at Naples in 1615, and was entitled *Amor non ha Legge*. The first *opera buffa* is said to have been represented at Venice in 1624, where also the first stage for operas was erected in 1637. In 1646 the opera was transplanted to France by Cardinal Mazarin, about the same time to Germany, and somewhat later to England. In France there arose Lulli; in Germany, Keiser; in Italy, Scarlatti; and in England, Purcell, who are the chief operatic composers of the second half of the seventeenth century. The chief Italian operatic composers include, besides those already mentioned, Piccini, Jomelli, Cimarosa, Paisiello, in the eighteenth century, and Cherubini, Rossini, Bellini, Donizetti, Verdi, etc., in the nineteenth. Among the French composers are Grétry, Monsigny, Rousseau, Méhul, belonging to the eighteenth century, Boildieu, Auber, Halévy, Herold, A. Thomas and Gounod to the nineteenth. The chief recent composers of French comic operas are Offenbach, Lecoq, Hervé and Bizet. Among English composers of operas may be mentioned Arne and Shield in the last century; and of the present or recent times Balfe, Wallace, Macfarren, Sullivan, Mackenzie, Thomas and Stanford. It is the German composers, however, who have raised opera to the highest pitch of perfection, the list including such names as Handel, Gluck and Mozart in the eighteenth century, Beethoven, Weber, Flotow, etc., in the nineteenth. Meyerbeer, though German by birth, is to be classed rather with the modern French composers. In the most recent school of German operatic composition, at the head of which stands Richard Wagner, the vocal music of the piece is deprived of the prominent place formerly assigned to it, and is made subordinate to the other three elements of an opera—text, instrumentation and scenic decoration.

Opéra Bouffe (bụf), a farcical form of opera buffa in which the characters, subject-matter, and music is intended to burlesque the more serious style of opera. Offenbach was the creator as well as the chief master in this art. The comic operas of Gilbert and Sullivan, both in the character of the music and the libretti, stand by themselves.

Opera-glass, a small binocular telescope of a low magnifying power, so called from its use in theaters. The two tubes are connected together, and have their foci adjustable by turning a milled-headed screw between them. See *Telescope.*

Operculum (ō-pèr′kū-lum), literally a lid or cover, and specifically applied to a horny or shelly plate developed in certain univalve mollusca upon the hinder part of the foot, and serving to close the aperture of the shell when the animal is retracted within it. It is also applied to part of the gill-cover of fishes.

Ophicleide

Ophicleide (of′i-klīd), a brass wind instrument of music invented to supersede the serpent in the orchestra and in military bands. It generally consists of a wide conical tube, terminating in a bell like that of a horn, with a mouthpiece and ten holes or ventages which are stopped by keys. Ophicleides are of two kinds,

the bass and the alto; the former has a compass of three octaves and one note, ranging from B on the third space below the bass staff to C on the third space of the treble staff, including all the intermediate semitones. The alto ophicleide (an inferior instrument) has the same extent of compass but starts an octave higher.

Ophidia (o-fid'i-a), an order of reptiles comprising the serpents. See *Serpents.*

Ophiocephalus (o f - i-ō-sef'a-lus), a genus of fishes allied to the climbing perch, and like it able to live a long time out of the water.

Ophioglossum (of-i-ō-glos'um), a genus of ferns. See *Adder's-tongue.*

Ophir (ō'fėr), a country or city to which the Hebrews made voyages in the time of Solomon, bringing home gold, almug-wood, and precious stones. Some identify it with the Ophir mentioned in Gen. x, 29, which was apparently situated in Arabia; while others place it in India, or in Africa.

Ophite (of'īt), a Gnostic sect of the second century, so called be- a dusky green color of different shades, sprinkled with spots of a lighter green. It is a hydrous silicate of magnesia with alumina and iron. Called also *Ophiolite.*

Ophites (of'īt), a Gnostic sect of the second century, so-called because they held that the serpent by which Eve was tempted was Christ himself, and hence regarded the serpent as sacred.

Ophiuchus (of-i-ö'kus), the Serpent-bearer, called also *Serpentarius;* one of the old northern constellations, representing a man holding a serpent, which is twined about him. The moderns, however, make a separate constellation of the Serpent.

Ophiuroidea (of-i-ū-roi'de-a), an order of the Echinodermata, comprising star-fishes known as brittle-stars and sand-stars. These animals have long slender-jointed arms, which may either be branched or simple.

Ophthalmia (o f - t h a l' mi-a; Greek, from *opthalmos,* an eye), an inflammation of the mucous membrane which covers the globe of the eye, and of the corresponding surface of the eyelids. It is either acute or chronic, and its commonest cause is the presence of irritating matter between the eyelids or the exposure of the membrane to sudden cold. Its characteristic marks are pain, redness, a feeling as if sand were in the eye, and a copious flow of tears.

Ophthalmoscope (o f-thal'ma-skōp), an instrument for observing the internal structure of the eye. It consists of a mirror (plane in that of Coccius, concave in that of Desmarres), by which light from an artificial source is directed into the eye of the patient, and a double-convex lens, by which the illumined parts of the structure of the eye are magnified in order that they may be more easily examined, the observer looking through a hole in the center of the mirror. The light is usually placed to the side of and slightly behind the patient's head.

Opie (ō'pē), Amelia, a novelist, born at Norwich, England, in 1769; died in 1853. In 1798 she married John Opie, the well-known painter, and from this period began, under the encouragement of her husband, to publish her tales of *Father and Daughter, Adeline Mowbray, Detraction Displayed,* and various volumes of poetry. In 1807 she lost her husband, and thereupon returned to Norwich, where she continued to reside until her death.

Opie, John, an English painter, the son of a carpenter, born near Truro, Cornwall, in 1761; died in 1807. Having shown a precocious aptness in portrait painting, he was taken to London in his nineteenth year by Dr. Wolcot (Peter Pindar), and there he acquired notoriety as the *Cornish Wonder.* When his portrait painting ceased to be fashionable he devoted himself to historical and Scriptural subjects with such success that he became a Royal Academician in 1788, and was elected professor of painting to the Royal Academy in 1805. He was the author of a biography of Sir Joshua Reynolds in Pilkington's *Dictionary of Painters,* and his four lectures on painting, with a memoir, were published by his wife (see above).

Opisthobranchiata (ō-pis-thō-branki-ā'ta), a division of Gasteropoda in which the gills are placed posterior to the heart.

Opisthoc'omus. See *Hoatzin.*

Opitz (ō'pits) or Opitius, Martin, a German poet, born in 1597; died in 1639. He studied at Frankfort-on-the-Oder and at Heidelberg, and having afterwards visited Holland he went in 1621 to the court of the Duke of Liegnitz, whence in about a year he removed to become a professor of philosophy and classical literature at the University of Weissenburg (now Karlstadt). Becoming distinguished for his talents, he went in 1625 to Vienna, where the Emperor Ferdinand II bestowed on him the poetical crown and letters of nobility, when he assumed the title of Von Boberfeld.

Among his works are a poem on *Mount Vesuvius, Silvæ, Epigrams*, etc; but he is more important for the influence of his teaching regarding correctness in poetic style than for his own poems.

Opium (ō'pi-um), the inspissated juice of a species of poppy (*Papāver somniferum*), cultivated on a large scale principally in Hindustan and in Asiatic Turkey, but well known in many places as a garden plant, being an annual with white, red or violet flowers and glaucous leaves. The opium is the juice that flows from incisions made in the green heads or seed-capsules of the plant after the fall or removal of the petals, and the best flows from the first incision. The juice is at first a milky liquid, but soon solidifies and turns black, and is then scraped off and collected. It is one of the most energetic of narcotics, and at the same time one of the most precious of all medicines, and is employed in a great variety of cases, but most commonly for the purpose of procuring sleep and relief from pain. In medicine it is very commonly used in the form of *laudanum*, which is a simple tincture or extract in spirits of wine; it is also an ingredient in various *patent* and other remedies. Another opium preparation is *morphine* (which see). In its natural state opium is heavy, of a dense texture, of a brownish-yellow color, not perfectly dry, but easily receiving an impression from the finger; it has a faint smell, and its taste is bitter and acrid. The chief active principle of opium is morphine, or morphine in combination with meconic acid. The principal part of our supply of opium is brought from Turkey, whence it is imported in flat pieces or cakes, covered with leaves. In the case of many temperaments opium produces such agreeable effects, whether a delightful dreamy calm, a state of pleasant exhilaration, or beatific visions, that numbers of persons are led to use it habitually, as others use alcohol in some form, though over-indulgence in it is attended with at least as evil effects as over-indulgence in the latter. But like tobacco it is taken by vast numbers without any apparent result one way or other. Some habitual takers of opium can take as much in a day as would kill ten or twenty persons unaccustomed to it. It is taken in two ways, known as opium-eating and opium-smoking. The habitual use of opium is most common in China, the southeast of Asia, and the Malay Archipelago, where it is chiefly smoked in a special pipe. The pipe, or rather the stem of the pipe, is about the length and size of an ordinary flute; the bowl is generally made of earthenware. The smoker, who is always lying, or at least reclining, takes a small portion of opium about the size of a pea on the end of a spoon-headed needle, heats it at a lamp, and then places it in the bowl of the pipe, the pellet of opium having previously been perforated with the needle. He then brings the opium to the flame of the lamp, inhales the smoke in several inspirations, and is then ready to repeat the process with a fresh quantity of opium until the desired intoxication ensues. Large quantities of opium are consumed in China, a great part of which comes from India, though probably as much more is also produced in China itself. The Indian opium, however, is preferred to their own by the best judges among the Chinese. In India it is cultivated (by private cultivators) as a government monopoly, and produces a large revenue to the government. Opium has had the distinction among plants of giving rise to a war, the 'opium war' of 1840-42, between England and China, arising from the destruction by Chinese authorities of a large quantity of opium imported by British merchants. Though defeated, China continued to oppose the introduction of opium, and was encouraged to take action again when the United States opposed the introduction of opium into the Philippines and in 1908 prohibited it. As a result China has made a treaty with England for an annual reduction of 10 per cent. in the opium importation, and in 1910 the Chinese senate resolved on immediate action to obviate the evils of opium smoking. At the instance of the United States an International Opium Congress was held at Shanghai in 1909 at which the trade was strongly condemned and steps taken to restrict it.

Opium Poppy. (*Papāver somniferum*)

Opodeldoc (op-ō-del'dok), a solution of soap and alcohol, with the addition of camphor and volatile oils. It is used externally against rheumatic pains, sprains, bruises, and other like complaints.

Opoponax (o-pop'ā-naks), the inspissated juice of an umbelliferous plant (*Opopanax Chironium*), a fetid gum-resin imported from Turkey, and now and again used as an antispasmodic in nervous complaints. There is

a compound perfume which also receives this name.

Oporto (ō-pōr'ṭą; Portuguese, *O Porto*, the port), a large city and seaport of Portugal, the second in the kingdom, capital of the province of Entre Douro e Minho, on a steep declivity on the right bank and about 2 miles from the mouth of the Douro, 170 miles north of Lisbon. The river is crossed by two iron bridges of recent construction, one of them, the railway bridge, especially bold and striking. The appearance of the city on a first approach is very prepossessing, but in reality most of the streets are narrow, crooked and dirty, and the houses irregularly constructed. Among the chief buildings are the Gothic cathedral, the church of S. Francisco (Gothic), the bishop's palace, an enormous building, the English club, the exchange, and the Torre dos Clerigos, a granite tower 210 ft. high. There are also museums, a large library, medical college, Crystal Palace and fine garden, etc. The principal trade is in wine, white and red, but chiefly the latter (*port* wine, so named from this town), which is principally exported to Britain. There are some manufactories of hats, silks, cotton, woolen and linen stuffs, pottery, lace, glass, leather and paper, etc. Oporto was at one time the capital of Portugal. In 1809 Wellington drove the French out of it after the remarkable passage of the Douro. Pop. 167,955.

Opossum (o-pos'um), the name of several species of *Didelphys*, a genus of marsupial mammals, having four *hands* and a long prehensile tail. They are nocturnal animals, arboreal in their habits, living constantly on trees,

Virginian Opossum (*Didelphys virginiāna*).

and there pursuing birds, insects, etc., although they do not despise fruit. The females of certain species have an abdominal pouch in which are the mammæ, and in which they can inclose their young. The best-known species of opossum is the *Didelphys virginiāna*, very common in the United States. It is almost the size of a large cat, the general color whitish-gray, and the whole hair of a wool-like softness. On the ground the motions of the opossum are awkward and clumsy, but on the branches of a tree it moves with great celerity and ease, using the prehensile tail to assist its motions. When caught or threatened with danger the opossum counterfeits death, and 'playing 'possum' has on this account passed into a proverb as used to indicate any deceitful proceeding. The female has from ten to fifteen young, which are for a long time nourished in the pouch, to which they resort when alarmed. The flesh of the animal is greatly enjoyed by the negro population.

Opossum-shrimp, the popular name of several species of *Mysis*, a genus of small crustaceans. They receive their name from the females carrying their eggs and young in a pouch between the thoracic legs.

Oppeln (ōp'peln), a town in Prussian Silesia, on the Oder, 53 miles southeast of Breslau. It has an old royal castle, gymnasium, hospital, etc.; tobacco factory, cement and soap works, breweries, limekilns, and some shipping trade. Pop. 30,769.

Oppenheim (ōp'en-hīm), an old town of Germany, in Hesse, on the left bank of the Rhine, 12 miles south of Mainz, on the slope of a hill abounding in vineyards, a place of considerable historical importance in the Thirty Years' war and later. Pop. 3696.

Oppian (op'pi-an), the name of two Greek authors, one of whom wrote a poem entitled *Halieutica* (Fishing), and the other a poem on *Cynegetica* ('Hunting'). The author of the *Halieutica* flourished about 170 A.D. His poem consists of about 3500 lines, divided into five books. The author of the *Cynegetica* was born at Apamea or Pella, in Syria, and flourished about 210 A.D. His work, which was dedicated to the Emperor Caracalla, is composed of four books containing 2100 hexameter lines. There is also a paraphrase of a poem on *Hawking*, attributed to Oppian; but it is doubtful to which of the two it belongs.

Opposition (op-u-zi'shun), in astronomy, the situation of two heavenly bodies when diametrically opposed to each other, or when their longitudes differ by 180°. Thus there is always an *opposition* of sun and moon at every full moon; also the moon or a planet is said to be in *opposition* to the

sun when it passes the meridian at midnight. See *Conjunction.*

Opposition, in politics, the party who, under a constitutional government, are opposed to the existing administration, and who would probably come into power on its displacement.

Ops, the Roman female divinity of plenty and fertility. She was regarded as the wife of Saturn, and, accordingly, as the protectress of everything connected with agriculture.

Optative (op'ta-tiv), in grammar, that form of the verb in which wish or desire is expressed, existing in the Greek and some other languages, its force being conveyed in English by such circumlocutions as 'may I,' 'would that he,' etc.

Optics (op'tiks) is the branch of physics which treats of the transmission of light, and its action in connection with the laws of reflection and refraction, including also the phenomena of vision. A *ray* of light is the smallest conceivable portion of light, and is represented by the straight line along which it is propagated. A *pencil* of light is a collection of such rays; it is *parallel* when all the component rays are parallel to each other; *converging* when they all proceed to a single point; and *diverging* when they all proceed from a single point. The *focus* of the pencil is the point to or from which the rays proceed. Any space or substance which light can traverse is in optics called 'a medium.' When light falls on any surface a certain portion of it is *reflected* or sent back, and it is owing to this reflected light that objects are visible. When light falls upon the surface of a solid substance or medium that it can traverse (a transparent substance), one portion greater or less is directed or reflected back into the medium whence it came; another portion is transmitted through the solid medium, but undergoes a change called *refraction;* while a third portion is absorbed in the new medium. When all the minute parts of a surface give out rays of light in all directions we call it a luminous surface, whether it is self-luminous or is merely reflecting the light from a self-luminous body such as the sun. The *law of reflection* is that the angle of incidence and that of reflection are in the same plane, and that the angle of reflection is equal to the angle of incidence, and on the opposite side of the perpendicular. This law holds true whatever be the nature of the reflecting surface or the origin of the light which falls upon it. *The law of refraction* comes into operation when a ray of light passes through a smooth surface bounding two media not homogeneous, such as air and water, or when rays traverse a medium the density of which is not uniform, as the atmosphere. When the ray of light passes from a rarer into a denser medium, it is bent or *refracted* towards the perpendicular

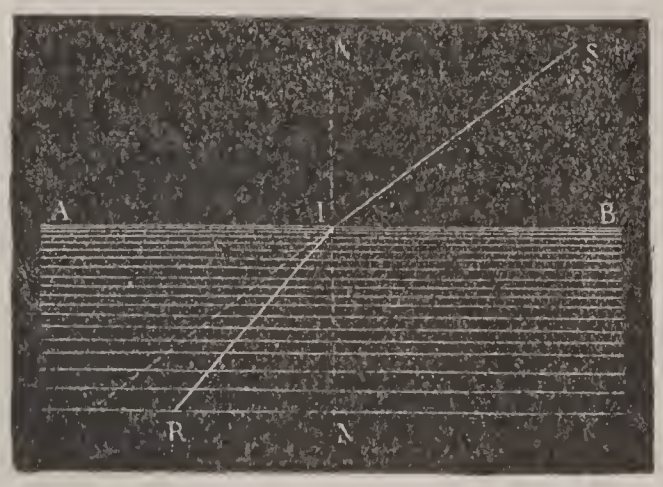


Fig. 1.—Refraction.

line drawn through the point of incidence, or the angle of refraction is less than the angle of incidence. On the contrary, when a ray of light passes from a denser into a rarer medium the refraction is from the perpendicular, or the angle of refraction is greater than the angle of incidence. If one medium is a liquid and the other air, as in the accompanying figure (fig. 1), the ray RI in the liquid will make a smaller angle with the normal NIN than the ray SI in air, and *vice versa.*

The law of reflection is illustrated especially by the action of mirrors. When a pencil of rays from a luminous point falls on a plane mirror each ray is reflected according to the law given above, and it is easy to show by geometry that the pencil which was divergent before incidence has exactly the same divergence after reflection; but the rays now seem to have proceeded from a point behind the mirror. This point is called 'the virtual image' of the first point (being not a *real* image of it); the line joining the points is at right angles to and is bisected by the mirror. Now a luminous object is made up of points, each of which sends a divergent pencil to the mirror, which seems after reflection to proceed from a point behind the mirror, and hence a luminous object sends rays to a plane mirror which after reflection seem to have proceeded from a luminous object behind the mirror. An eye receiving a ray (or a small pencil of rays) gets the impression that the luminous point from which it was sent is somewhere in the line of the ray just before reaching the eye, and hence an eye in such a position as to receive after reflection a few rays from

every point of the object sees the image of the object. (See fig. 2.) Besides plane mirrors concave and convex mirrors are often used in optics. When a mirror is not plane the incident rays from a luminous point in general neither converge to a single point after reflection nor diverge as if they had come from a virtual image. But when a concave mirror forming a small portion of a spherical surface is used we find that all the rays falling upon it from a luminous point converge so nearly to a luminous point after reflection that their 'aberration' (as the non-convergence of the rays is called) may be neglected in practice. The line joining the center of the spherical surface with the 'pole' of the mirror (that is, the middle point of the reflecting surface) is called the *principal axis.* Any bundle of rays parallel to the principal axis converges after reflection to a point in the axis called the *principal focus;* and any bundle of parallel rays converges

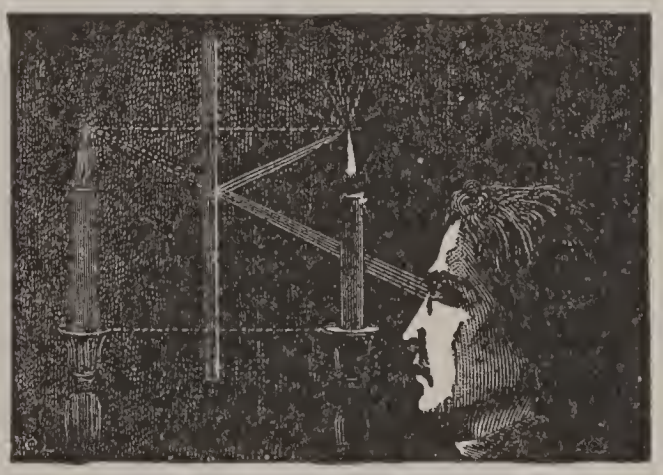


Fig. 2.—Reflection (Plane Mirror).

after reflection to a focus which is at the same distance from the mirror as the principal focal distance. When the object from which the rays proceed is at a considerable distance, an inverted image of it will be formed midway between the center of curvature and the mirror. When the object is only at a moderate distance, but exceeding half the radius of curvature, an inverted image is still formed in front of the mirror, being diminished when nearer the mirror than the object is, and magnified when farther away than the object. The image of an object placed nearer a concave mirror than the principal focus is erect and larger than the object, and is 'virtual' as in fig. 3, where A B is the object, *ba* its image (inverted), F the focus, C the center of curvature. The image of any object in a convex mirror is also virtual and erect; it is, however, smaller than the object.

When the two faces of a piece of glass through which light is refracted are both of them plain, it is called a *plate* if they are parallel, and a *prism* if they are not parallel. When the faces are curved, or one of them curved and the other plain, it is called a *lens.* Prisms are the essential parts of the apparatus used for de-

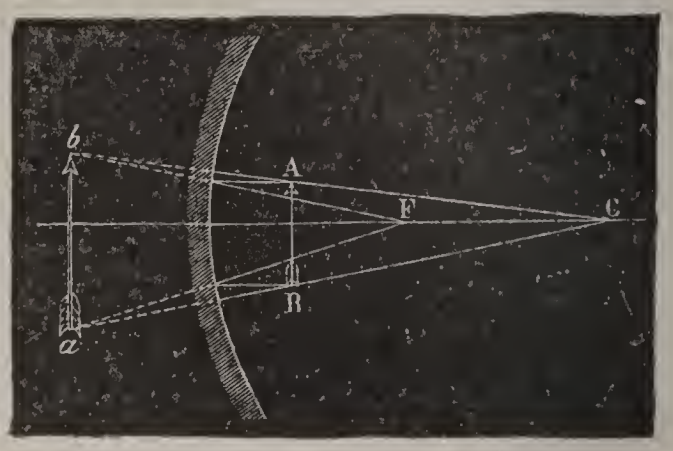


Fig. 3.—Reflection (Concave Mirror).

composing light and examining the properties of its component parts, as in spectrum analysis. (See *Light.*) A lens may be regarded as consisting of an unlimited number of prisms, the angles between their faces gradually diminishing the farther away from the axis of the lens. It is the property of convex lenses to diminish the divergency of the pencils of light, of concave lenses to increase that divergency. It is the duty of a convex lens to make rays parallel to the axis falling on one face of it converge accurately to one point after emerging from the other face. This point is called the principal focus, and is the point where a 'real' image would be formed. When rays parallel to the axis pass through a concave lens they diverge, and if produced backwards in the direction from which they come they would meet at one point, which in this case also is called

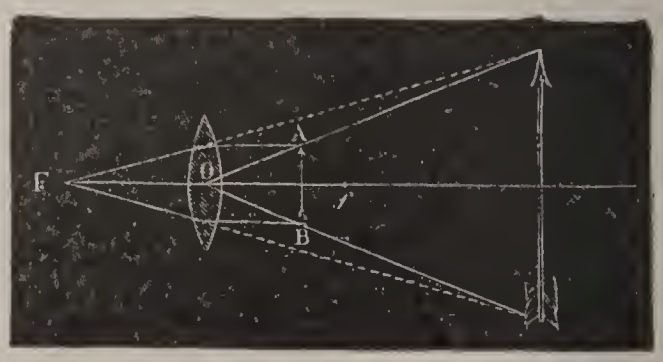


Fig. 4.—Magnification of near Object by Convex Lens.

the principal focus; but it is only a virtual focus, because the rays themselves do not pass through it, but only their backward productions. Thus concave lenses bend rays from the axis, and convex ones bend them towards it. When

we look through a concave lens it makes objects seem smaller whatever their distances are. When we look through a convex lens at an object between the lens and the principal focus it appears larger than it really is, and hence the use of such lenses in magnifying-glasses, microscopes and telescopes. The rule as to the relative size of object and image will be understood from fig. 4, where the small arrow A B is the object, and the large arrow its image, O being the center of the lens, F *f* its foci. Rays from A B are refracted towards the axis by the lens, and as the *visual angle*, or angle made by the rays at the eyes, is larger than if there were no lens, the object appears magnified. The length of the object and the image will be directly as their distance from O; so that if the image is three times as far from the lens as the object, it will be three times as long and three times as broad. *Convex* lenses are used in spectacles for long-sighted (or *old*-sighted) persons, because the lens of their eye is too much flattened, and does not of itself cause a sufficient convergency of the rays to make an image on the retina, but one that would fall behind it. *Concave* lenses, again, are used by near-sighted persons, because the rays in their case converge so much as to make an image in front of their retina instead of on it. See *Eye*, *Light*, *Microscope*, *Telescope*, *Spectroscope*, etc.

Optimism (op′tim-izm), that philosophical doctrine which maintains that this world, in spite of its apparent imperfections, is the best possible. It is an ancient doctrine; among modern philosophers Leibnitz is its principle advocate.

Optometer (op-tom′e-ter), an instrument for measuring the extent of the limits of distinct vision in different individuals, and consequently for determining the focal lengths of lenses necessary to correct imperfections of the eye.

Opuntia (ō-pun′shi-a), a genus of plants of the Cactus order, having stems consisting of flat joints broader above than below, but ultimately in process of growth losing this appearance. Their native country is South America. Many have handsome flowers, and some of them yield a pleasant sub-acid fruit. *O. Tuna* is cultivated in Mexico for the cochineal insect. A common name of this species is prickly-pear or Indian-fig. See *Indian-fig*, *Prickly-pear*.

Or, in heraldry, the tincture that represents gold. See *Heraldry*.

Orach, ORACHE (or′ach), is the popular name of several plants of the genus *Atriplex*, order Chenopodiaceæ, plants with mealy foliage, generally growing near the sea. A cultivated species (*A. hortensis*) is known as garden or mountain spinach, being used like spinach.

Oracles (or′a-klz), the answers which the gods of the Greeks, Romans, Egyptians, etc., were supposed to give, by words uttered or otherwise, to those who consulted them upon any occasion; also the places or sources whence these answers were received. The credit of oracles was so great that vast numbers flocked to them for advice. Scarcely any war was waged, or peace concluded, or new form of government instituted, or new laws enacted, without the advice and approbation of some oracle. The Greek oracles are the most celebrated, the earliest being that of Zeus (Jupiter) at Dodona. Of the other gods Apollo had many oracles, but that at Delphi held the first place, and it was often applied to for explaining obscure answers obtained at Dodona. Another famous oracle of Apollo was in the island of Delos. The Romans had no important oracles of their own, but had recourse to those of Greece and Egypt. The early Christians ascribed the oracles in general to the operation of the devil and his agents; but the practices of the priests, the manner and circumstances of delivering the oracles, the ambiguity of their answers, and the art of accommodating them to all events, amply demonstrate their human origin; yet they long maintained their standing, and sunk only with the freedom and independence of Greece. Under the reign of Theodosius the temples of the prophetic deities were shut up or demolished.

Oran (ō-rän′), a seaport of Algeria, capital of province of same name. The town rises in the form of an amphitheater, has now largely a European character, and is strongly fortified. The harbor was formerly at Mersel-Kebir, about 5 miles northwest of the town, but recently excellent accommodation for shipping has been provided at Oran itself. Oran has a large trade. Chief exports: cereals, esparto and alfa grass, wine, olives, etc. Pop. 100,499, of whom nearly half are French.—The province, forming a long belt along the Mediterranean, has an area of 23,450 sq. miles and a population of 1,050,734.

Orang (ō-rang′), or ORANG-OUTANG, a quadrumanous mammal, the *Pithēcus satŷrus* or *Simia satŷrus*, one of the anthropoid or man-like apes or monkeys. This animal seems to be confined to Borneo, Sumatra and Malacca.

It is one of those animals which approach most nearly to man, being in this respect only inferior to the chimpanzee and gorilla. It is utterly incapable of walking in a perfectly erect posture. Its body is covered with coarse hair of a brownish-red color; in some places on its back it is 6 inches long, and on its arms 5 inches. The face is destitute of hair save at the sides. It attains the height of from 4 to 5 feet, measured in a straight line from the vertex to the heel. The arms reach to the ankle-joint. The hind-legs are short and stunted, the nails of

Orang-outang (*Pithecus satyrus*).

the fingers and toes flattened. They swing themselves along from tree to tree by the aid of their long arms, but their gait on the ground is awkward and unsteady. At birth the head of the orang resembles that of the young child. These apes are remarkable for strength and intelligence, and capable of being highly domesticated if captured young. They feed chiefly on fruits and sleep on trees. See also *Man*, *Apes*, *Monkeys*.

Orange (or'inj), the fruit of the *Citrus Aurantium*, and the shrub or tree itself, nat. order Aurantiaceæ. The orange is indigenous in China, India, and other Asiatic countries, and was first introduced in Portugal about 1520. It is now extensively cultivated in Southern Europe. In Portugal and Spain the fruit forms an important article of commerce. Large quantities are produced in the Azores, in Africa, in Florida and California, also in the West Indies, Australia and the Pacific Islands. The tree is a middle-sized evergreen, with a greenish-brown bark. The leaves are ovate, acute, pointed, and at the base of the petiole are winged. The white flower exhibits a calyx with five divisions, a corolla with five imbricate petals, stamens, equal in number to the petals or a multiple of them, and along with the petals inserted on a hypogynous disc, the filaments being united in several bundles. The fruit is globose, bright yellow, and contains a pulp which consists of a collection of oblong vesicles filled with a sugary and refreshing juice; it is divided into eight or ten compartments, each usually containing several seeds. The principal varieties are the common sweet or China orange, the bitter or Seville, the Maltese or red pulped, the Tangerine, the Mandarin or clove, and the St. Michael's. The leaves, flowers and rind yield fragrant oils much used in perfumery and for flavoring essences. The wood is fine-grained, compact, susceptible of a high polish, and is employed in the arts. The citron and lemon are allied fruits.

Orange, a small and ancient principality in the southeast of France, which from the eleventh to the sixteenth century had its own princes. By the Peace of Utrecht (1713) it was ceded to France. The reigning dynasty of the Netherlands is of the house of Orange, and the heir-apparent bears the title of *Prince of Orange*.

Orange (the ancient *Arausio*), a town of France, department of Vaucluse, 18 miles north of Avignon. It was for a long time the capital of the principality of the same name, and is now chiefly celebrated for its architectural remains. Pop. 6470.

Orange, a village of Franklin County, Massachusetts, on Miller's River, 37 miles W. of Fitchburg. It produces sewing machines, automobiles, machinery, cereals, etc. Pop. 5282.

Orange, a township (town) in New Haven Co., Connecticut, with a village of the same name, 6 miles S. W. of New Haven. Pop. of town 11,272.

Orange, a city of Essex County, New Jersey, 12 miles west of New York. It is picturesquely situated on elevated ground, and contains many fine residences, being a favorite dwelling place for New York city men. It is connected by electric cars with Newark, 3 miles distant, and has manufactures of electrical supplies, phonographs, hats, etc. Pop. 29,630.

Orange, a city and the county seat of Orange County, Texas, on the Sabine River, 10 miles from its mouth and 90 miles N. E. of Galveston. Here are large lumber and shingle mills, and sugar, rice and fruit are products. Pop. 5527.

Orangeburg, a city, capital of Orangeburg Co., South Carolina, on the North Edisto River, 51 miles S. of Columbia. It has rice, cotton and lumber interests, and possesses

collegiate institutions for colored students. Pop. 5906.

Orangemen, the members of a secret society founded in the north of Ireland in 1795, to uphold the Protestant religion and political ascendency, and to oppose the Catholic religion and influence and their secret societies. The title of the association was adopted in honor of William III of England, prince of Orange. The head of the association is the Imperial Grand Lodge with its imperial grand-master; then there are grand lodges, grand county lodges, district and subordinate lodges, spread over Ireland, Great Britain, and some of the colonies, especially Canada, but the chief strength is in the north of Ireland. In 1835 the society was dissolved in consequence of intrigues in the army, but revived in 1845. Great demonstrations take place annually on the 12th of July, the anniversary of the battle of the Boyne, and encounters of processions of the opposite parties are apt to be the cause of serious disturbances.

Orange River, or GARIEP, a river in South Africa, forming part of the north boundary of Cape Colony, and falling after a total course of about 650 miles into the Atlantic. It is formed by the junction of the Ky Gariep, or Vaal River, with the Nu Gariep, Black or Cradock River, both of which have their sources in the Drakensberg or Quathlambu Mountains, near the same locality. Its volume varies greatly, and it is of no use for navigation.

Orange River Colony, until 1900 Orange Free State, of South Africa. It has Cape Colony on S. and S. W., Bechuanaland on N. W., Vaal Colony on N., Natal on E., Basutoland on S. E.; area estimated at 48,326 sq. miles, divided into nineteen districts; pop. 389,315, of whom 142,679 are whites. It was founded in 1835-36 by Dutch settlers from Cape Colony, annexed by Britain in 1848 in order to put a stop to the Boer outrages upon natives; then in 1854 it was recognized as an independent state. In 1899 it joined the South African Republic in declaring war against Britain. The year following it was proclaimed a British colony by General Roberts. Lying about 5000 feet above the sea-level, the country, chiefly vast, undulating plains, is cold in winter, with violent thunderstorms and long droughts in summer. It is, however, very healthy and favorable to European constitutions. Pasturing is the chief occupation, and wool, hides and ostrich feathers the principal exports. Diamonds and other precious stones are found in paying quantities, valuable coal mines exist, and the colony is said to abound in mineral wealth. Gold was first discovered here in 1887. It is now administered as a crown colony. The Dutch Reformed Church is the dominant religion, and a Dutch dialect the present language of the colony. The capital is Bloemfontein, a pretty, well-built city, containing a population of 33,883. In 1909 it became a member of the Union of South Africa under its original name of Orange Free State.

Oratorio (or-a-tō′ri-ō; Italian *oratorio*, a small chapel, the place where these compositions were first performed), a sacred musical composition consisting of airs, recitatives, duets, trios, quartetts, choruses, etc., with full orchestral and sometimes organ accompaniment, the subjects being generally taken from Scripture. Its origin has been usually ascribed to St. Filippo de Neri, who, in 1570, founded the congregation of the Oratory in Rome, one of the objects of which was to render religious services as attractive as possible. Its increasing popularity induced poets of eminence to supply texts for these works, and Metastasio wrote a number of oratorios. The oratorio was introduced into England in 1720, when Handel set *Esther* (Racine's tragedy adapted by Humphreys) for the chapel of the Duke of Chandos. It was performed by the children of the Chapel Royal in 1731, and in 1732 was publicly produced. Among the most notable productions are the *Messiah* and *Israel in Egypt*, by Handel; the *Creation*, by Haydn; the *Mount of Olives*, by Beethoven; the *Last Judgment*, by Spohr; *Saint Paul* and *Elijah*, by Mendelssohn. Among the oratorios by living composers may be mentioned *The Light of the World* and *The Prodigal Son*, by Sir Arthur Sullivan; *The Rose of Sharon*, by A. C. Mackenzie; *The Deluge* and *Ruth*, by F. H. Cowen. At the musical festivals throughout England oratorios are performed on a large scale; at the triennial festivals in the Crystal Palace the band and chorus amount on an average to nearly 4000 performers. In the United States and Germany the oratorio is almost as popular as in England.

Oratory (or′a-tu-ri), an apartment in a private house or building designed for domestic worship. It differs from a chapel inasmuch as it contains no altar, nor may mass be performed in it.

Oratory, PRIESTS OF THE, a religious order founded in Rome by St. Filippo de Neri in 1570, for the study of theology, and for superintending the religious exercises of the devout, visiting

the sick, etc. The members live in community, but are not bound by monastic vows; they are at liberty to withdraw at any time, and pay a fixed sum towards the common expenses.

Orbiculina (or-bi-kū-lē′na), a genus of minute foraminifers, found alive in tropical seas, as also fossil in the tertiaries. They derive their name from their flattened globular shape.

Orbit (or′bit), in astronomy, the path of a planet or comet; the curve-line which a planet describes in its periodical revolution round its central body. The orbits of the planets are elliptical, having the sun in one of the foci; and the planets all move in these ellipses by this law, that a straight line drawn from the center of the sun to the center of any one of them, termed the *radius vector*, always describes equal areas in equal times. Also the squares of the times of the planetary revolutions are as the cubes of their mean distances from the sun. The satellites also move in elliptical orbits, having their respective primaries in one of the foci. The *elements of an orbit* are those quantities by which its position and magnitude, for the time, are determined; such as the major axis and eccentricity, the longitude of the node, and inclination of the plane to the ecliptic, and the longitude of the perihelion.

Or′cades. See *Orkney Islands.*

Orcagna (or-kàn′yà), ANDREA DI CIONE, born about 1308; died about 1386; one of the greatest of the early Florentine artists after Giotto. Painting, sculpture, architecture and mosaic work were all within the sphere of his artistic genius; and his productions compare favorably with the best of a period so rich and distinguished in the art of Italy. As a painter he executed the beautiful frescoes in the church S. Maria Norella at Florence; the chapel San Michele and its magnificent tabernacle in the same city are grand memorials of his architectural and sculptural talent. His style is remarkable for exquisite design, graceful pose, and delicate execution. Boccaccio has perpetuated his name in his *Decamerone.*

Orchard (ōr′chard), an enclosure devoted to the culture of fruit trees, especially the apple, the pear, the plum, the peach and the cherry. The most suitable position for an orchard is a declivity lying well exposed to the sun and sheltered from the colder winds, but yet not too much shut in. The soil should vary according to the kind of fruit cultivated, and it is generally allowed to produce only grass besides the fruit trees. Fruit cultivation is carried on most extensively on the continent of Europe and the United States, the apple and peach being very largely cultivated in some of the States, and yielding the finest and most delicious fruit. Canada also yields an abundance of fine apples.

Orchard-house, a glass-roofed shed designed for the cultivation of fruits to greater advantage than in the open air. The fruit trees in it are not allowed to attain any great size. They are planted in pots which have a large hole in the bottom, and through this the smaller roots pass to take nourishment from a specially prepared soil below. These roots are cut off after the fruit is gathered, and the trees then rest during the winter.

Orchardson (ōr′chard-sun), WILLIAM QUILLER, subject painter, born in Edinburgh in 1835. He painted portraits and exhibited in the R. S. A. till 1863, when he removed to London. He became an associate of the Royal Academy in 1868, and full academician in 1879. He is among the first of British incident painters, a fine colorist, and most of his works are skilfully dramatic and picturesque. Among his more notable pictures are *The Challenge, Christopher Sly, The Queen of the Swords, Napoleon on Board the Bellerophon, Un Mariage de Convenance, Salon of Mme. Recamier, The First Cloud* and *The Young Duke.*

Orchella (ōr-kel′à), the name of several species of *Roccella*, a genus of lichens, originally brought from the Levant, and employed from very early times as a dye agent. Large quantities are gathered in the maritime rocks of the Canary and Cape Verde Islands. A purple and a red dye, known as orchil or archil, are prepared from them.

Orchestra (ōr′kes-tra), the space in theaters between the seats occupied by the spectators and the stage, appropriated by the Greeks to the chorus and the musicians, by the Romans to the senators, and in our modern theaters to the musicians. The name is also used for the part of concert rooms assigned to the vocal and instrumental performers; and, lastly, is applied to the instrumental performers, collectively taken. A modern orchestra in the last sense consists of stringed, wind and percussion instruments, in varied proportions, according to the number of instrumentalists. The stringed instruments should greatly outnumber the wind instruments, and those latter the instruments of percussion.

Orchidaceæ (ōr-ki-dā′se-ē), or ORCHIDS, an extensive or-

der of endogens (nearly 2000 species being known), consisting of herbaceous plants or shrubs, with fibrous or tuberous roots; a short stem or a pseudo-bulb; entire, often sheathing leaves; and showy flowers, with a perianth of six segments in two rows, mostly colored, one, the lowest, generally differing in form from the rest, and often spiral. The essential form of these flowers is determined by the presence of this six-segmented perianth, the three outer segments of which are a kind of calyx, the three inner forming a kind of corolla. By adhesion or abortion the parts of the perianth are sometimes reduced to five or three, and springing from its sides are the six stamens whose anthers contain pollen-grains. They are natives of all countries, but very cold and dry climates produce but few species; some of them grow in the ground, but a large number are epiphytes, growing upon trees; and it is above all in the great virgin forests of South America and of the East Indies that the orchids abound. The orchids attract much attention, and are cultivated with zeal on account of the beauty or curious shapes of the flowers (which often assume the forms of reptiles, insects, and other denizens of the animal kingdom), or for their not unfrequently fragrant smells. The cultivation of orchids has of recent years become a sort of mania, large sums being often paid for new or rare varieties. The nutritive substance

Butterfly Orchid (*Oncidium Papilio*).

called salep is prepared from the roots and tubers of several species; the fragrant vanilla is obtained from two species of a genus of that name. The figure gives an illustration of one interesting species; for others see *Orchis* and *Vanilla*.

Orchil (ōr'kil). See *Archil*.

Orchis (ōr-kis), the typical genus of the order Orchidaceæ, comprising hardy perennials with tuberous fleshy roots, containing much starch; natives of Europe, temperate Asia, and a few of North America. *O. spectabilis*, a pretty

The Salep Orchis (*Orchis mascŭla*).

little plant, is found in shady woods and among rocks. *O. mascŭla* yields salep. See *Orchidaceæ*.

Orcin, or ORCINE (ōr'sin; $C_7H_8O_2$), a peculiar coloring matter obtained from orchella. When exposed to air charged with vapors of ammonia it assumes by degrees a fine violet color; when dissolved in ammonia it acquires a deep blood-red color.

Orcus (or'kus), a name among the Romans for Tartarus or the infernal regions.

Ordeal (ōr'dēal), an ancient form of trial to determine guilt or innocence, practiced by the rude nations of Europe, in the East, and by the savage tribes of Africa. In England there were two principal kinds of ordeal, *fire-ordeal* and *water-ordeal;* the former being confined to persons of higher rank, the latter to the common people. Both might be performed by deputy, but the principal was to answer for the success of the trial. Fire-ordeal was performed either by taking in the hand a piece of red-hot iron, or by walking barefoot and blindfold over glowing coals or over nine red-hot ploughshares laid lengthwise at unequal distances; and if the person escaped unhurt, he was adjudged innocent, otherwise he was condemned as guilty. Water-ordeal was performed either by plunging the bare arm to the elbow in boiling water, escape from injury being considered proof of innocence; or by casting the person suspected into a river or pond, and if he floated without an effort to swim it was an evidence of

guilt, but if he sunk he was acquitted. It was at last condemned as unlawful by the canon law, and in England it was abolished by an order in council of Henry III. As success or failure, except in a few cases, depended on those who made the requisite preparations, a wide field was opened to deceit and malice. Besides these ordeals there were a variety of others practiced in many countries, such as the corsned or hallowed morsel trial, the trial by touching the dead body of a person murdered, which was supposed to bleed if touched by the murderer, the ordeal by swallowing certain herbs and roots, etc. After the fourteenth century ordeals became more and more uncommon. In the sixteenth century only the trial of the bier was used, and this continued even into the first part of the eighteenth. In consequence of the prevalent belief in sorcery or witchcraft the ordeal by cold water was long retained in the trials of witches. These foolish customs were generally done away, but isolated cases in some of the benighted countries of Europe happened until a comparatively recent period. Ordeals are still found in many nations out of Europe, as in West Africa, and other parts of that continent. In Madagascar till lately trial by ordeal (swallowing the poison of the tree *Tanghinia venenōsa*) was in regular use. The Chinese still retain the ordeal of fire and water, and various ordeals are practiced among the Hindus.

Ordeal-bean, Ordeal-nut, the seed of the Calabar bean. See *Calabar Bean.*

Ordeal-root, the root of a species of plant of the genus *Strychnos*, used as an ordeal in Western Africa.

Ordeal Tree, a name of two poisonous trees; *Erythrophlæum guineense* of Guinea and *Tanghinia venenōsa* of Madagascar. See *Erythrophlæum, Tanghin.*

Order (ōr'dėr), in zoology and botany, a subdivision of a class or large division of animals or plants, which, although agreeing in the characters common to the whole class, yet are more closely allied by some very special features in their economy. It is based upon broad criteria of structure. Thus in the class Mammalia we have the order of the Quadrumana or Monkeys; in the class of Birds we have the order of Natatores or Swimming Birds, in the class of Monocotyledonous Plants the order Liliaceæ, etc. The order itself is divided into subordinate groups named genera. See *Genus.*

Ordericus Vitalis (or-dėr'i-kus vi-tal'is), an Anglo-Norman historian, born in the neighborhood of Shrewsbury, in 1075, his mother being English, his father Norman. He received his education in the Abbey of St. Evroul (Normandy), where the name Vitalis was conferred on him, and in due time became a priest. He wrote in Latin an ecclesiastical history in 13 books, from the birth of Christ down to his own time. The later books are valuable to the historical student, as they offer a good description of the life and times of William the Conqueror, of William II, and of the first of the Crusades. He died after 1143.

Orderlies (ōr'dėr-lez), in the United States army, are privates and non-commissioned officers selected to attend upon general and other officers, for the purpose of bearing their orders and rendering other services. The *orderly officer*, or officer of the day, is the officer of a corps or regiment, whose duty it is to superintend its interior economy, as cleanliness, quality of the food, etc. An *orderly book* is provided by the captain of each company or troop, in which the general or regimental orders are entered.

Orders, Holy, a term applied to the different ranks of ecclesiastics. The Anglican and other Reformed Episcopal churches recognize only the three orders of bishops, priests, and deacons. The Roman Catholic Church admits of seven orders: four minor or secular—doorkeeper, exorcist, reader and acolyte; and three major—subdeacon, deacon, priest. The Greek Church has also the distinction of major and minor orders, but the functions of the four minor orders of the Roman Catholic Church are united by the Greeks in the single order of reader. The term *holy orders*, or simply *orders*, is also used as equivalent to the clerical character or position, as 'to take orders,' 'to be in orders.'

Orders, Military, fraternities or societies of men banded together in former times for military and partly for patriotic or Christian purposes. Free birth and an irreproachable life were the conditions of admission. The chief were the Templars, the Teutonic Knights, and the order of St. John of Jerusalem.

Orders, Religious, are associations, the members of which bind themselves to lead strict and devotional lives, and to live separate from the world. Prior to their formation there were only the Hermits or Anchorites. (See *Monastery.*) The entry into religious orders, from their foundation to the present time, is preceded by the taking of the

monastic vow, which enjoins residence in a monastery, celibacy, renunciation of worldly pleasures, the duty of prayer, fasting, and other austerities, and unconditional obedience to superiors. These conditions form the basis of the majority of orders, some being more austere in their observances than others. The first properly constituted religious order was founded in the fourth century by St. Basil. The Basilians are now chiefly confined to the Greek Church in the East. In the time of Justinian (530) St. Benedict established a new order, the Benedictines, under a set of rules based principally on those of St. Basil, and for some 600 years after the greatest number of European monks followed his statutes. According to some authorities as many as 23 orders sprung from this one. About 1220 the Dominicans and Franciscans originated by taking amended rules from their leaders. These rules, especially those of the Dominicans, were more austere, including perpetual silence, total abstinence from flesh, and the wearing of woolen only, and they were not allowed to receive money, and had to subsist on alms, being thus *mendicant* orders. The orders mentioned are the fountain heads of numerous others which arose to accommodate the changing times, the altered conditions of countries, and the particular policies of the church. Modified orders of the Benedictines are, for instance, the Camaldulians or Camaldolites, the Carthusians, the Celestines, the Cistercians, the Bernardines, Feuillants, Recollets, the nuns of Port Royal, and the Trappists. The reputed rules of St. Augustine were accepted by a large number of religious orders, but the monks, who were reckoned among the laity in the seventh century, could not adopt them, as they were designed for the clergy only. In the eighth century the monks began to be viewed as members of the clerical order, and in the tenth, by receiving permission to assume the tonsure, they were formally declared clergymen. Indeed, public opinion and several papal bulls placed them, as superior in sanctity, above the secular clergy, who for this reason often became monks. The Præmonstratenses, Augustines, Servites, Hieronymites or Jeronymites, Jesuits and Carmelites are regular orders, according to the rules of St. Augustine. Suborders of the Franciscans are the Minorites, Conventuals, Observantines, Fraticelli, Cordeliers, Capuchins, Minims, etc. As the secluded life of the monks, soon after the origin of monasteries, had given rise to similar associations of pious females, so nuns commonly banded together as new orders of monks arose, and formed societies under similar names and regulations. Thus there were Benedictine, Camaldulian, Carthusian, Cistercian, Augustine, Præmonstratensian, Carmelite, Trinitarian, Dominican, Franciscan nuns, and many orders of regular canonesses. There were also congregations of nuns who united with certain orders of monks without adopting their names. The Ursuline and Hospitaller nuns, or Sisters of Mercy, are female orders existing independently of any male orders, and living according to the rules of St. Augustine. Almost all the important religious orders received new accessions in the lay brethren and lay sisters, who were taken to perform the necessary labors of the monasteries, and to manage their intercourse with the world. The orders first established governed themselves in an aristocratic-republican manner. The Benedictine monasteries were long independent of one another. The Cistercians obeyed a high council made up of the superior, and other abbots and counselors, and these were again responsible to the general chapters. The four mendicant orders, the Dominicans, Franciscans, Augustines and Carmelites, at their very commencement placed themselves in a much more intimate connection with the popes. Dependent solely and immediately on Rome, they preserved the strictness of their organization with a success which could be maintained only by the unity of the ruling power and the blind obedience of the subjects. Most of the other orders soon adopted the same constitution. Accordingly at the head of every religious order stands a general or governor, who is chosen every three years from the officers of the institution, resides at Rome, and is responsible only to the pope. The counselors of the general are the officers to whom the supervision and government of monasteries is committed. See *Monastery*, and the articles on the various orders.

Orders of Architecture, the chief styles or varieties exhibited in the architecture of the Greeks and Romans. Technically the chief feature of the order is the column—including base, shaft and capital—and its superincumbent entablature (consisting of architrave, frieze and cornice). The character of the order, however, is displayed not only in its column, but in its general forms and detail, of which the column is, as it were, the regulator. There are five classic orders, namely Grecian: Doric, Ionic and Corinthian; Roman: Tuscan and Roman or Composite.

See *Architecture, Column,* and the articles on the various orders.

Orders of Knighthood.

See *Knighthood.*

Ordinal (ōr′di-nal), the prescribed form of service used at the ordination of clergy, as in the English, Roman Catholic, and Eastern churches. The ordinal of the English Church was originally drawn up in the time of Edward VI. It was altered to some extent in the reign of Queen Elizabeth, and again revised in 1661.

Ordinary (ōr′di-nȧr-i), in common law, one who has ordinary or immediate jurisdiction, in matters ecclesiastical, in any place. The term is more frequently applied to the bishop of a diocese, who, of course, has the ordinary ecclesiastical jurisdiction. An archbishop is the ordinary of the whole province, having power to visit and receive appeals from inferior jurisdictions. As a nautical term an *ordinary* seaman is one not qualified to take the helm or sail the ship, and is thus distinguished from an *able* seaman.

Ordinate (ōr′di-nȧt), in analytical geometry, one of the lines or elements of reference which determine the position of a point. See *Coördinates.*

Ordination (ōr-di-nā′shun), the initiating of a Christian minister or priest into his office. The English Church considers ordination as a real consecration; the high church party maintaining the dogma of the regular transmission of the episcopal office from the apostles down to the bishops of the present day. For ordination in the English Church, subscription to the thirty-nine articles is requisite. The ceremony of ordination is performed by the bishop by the imposition of hands on the person to be ordained. In most Protestant countries with a State church, ordination is a requisite to preaching; but in some sects it is not held necessary. In the Presbyterian and Congregational churches ordination means the act of settling a licensed preacher over a congregation, or conferring on him general powers to officiate wherever he may be called.

Ordnance (ōrd′nans). See *Cannon, Artillery, Howitzer, Mortar,* etc.

Ordnance Department, the department of the British government which for over 400 years provided the army and navy with arms, guns and ammunition, administered the affairs of the artillery and engineer regiments, executed fortifications and other works at home and abroad, and supplied all troops at home with forage. It was abolished during the Crimean war (May 25, 1855), and its functions divided between the war office and the Horse Guards. In the United States the Department of Ordnance is attached to the War Department, and has a Chief of Ordnance, with a large force of officers and clerks at an annual cost in salaries of $175,000.

Ordonnances (or′du-nan-ses), was the name given in France to decrees, edicts, declarations, regulations, etc., issued by the king or regent.

Ore (ōr), the compound of a metal and some other substance, as oxygen, sulphur, or carbon (forming oxides, sulphides, carbonates, etc.), by which its distinctive properties are disguised or lost. Metals found free from such combination and exhibiting their natural character are called *native.* Metals are commonly obtained from their ores by smelting, the ores having been previously oxidized by *roasting.* Ores are commonly found in veins or lodes. See *Mining,* and the articles on the different metals.

Oreads (ō′re-adz), nymphs of the mountains in Greek and Roman mythology.

Orebro (*eu*′re-brụ), a town of Sweden, capital of the län or division of same name, at the western extremity of the Hjelmar Lake, 110 miles west of Stockholm. It is well built, has an old royal castle, etc., and a considerable trade with Stockholm by the Hjelmar and Maelar lakes and the Arboga Canal. It was once the residence of Gustavus Vasa and of Charles IX. Pop. 22,013.

Oregon (or′ē-gon), one of the Pacific States of the American Union, bounded N. by Washington, E. by Idaho, S. by California and Nevada, and W. by the Pacific Ocean; area, 96,699 sq. miles. The coastal strip of Oregon, 300 miles long, is generally rugged and precipitous, with few harbors, and passes inland into a partial plateau which is densely timbered except in the south, which is a prairie-like region with groves of timber. This tract is bounded by the Coast and Umpqua ranges of mountains. Between these and the great Cascade range, 100 to 150 miles inland, lies the fertile Willamette Valley, 40 miles wide and 140 long, and the Umpqua and Rogue River basins. Mt. Hood, the loftiest peak in the Cascades, is 11,225 feet high. East of the Cascades lies two-thirds of the State, a rolling country, open and dry, and admirably adapted to pastoral pursuits. In the N. E. is the beautiful Grande Ronde, a valley with 275,000 acres of fertile

MODERN ORDNANCE

This photograph shows the new 16-inch coast defence gun now at Sandy Hook. It will form part of the armament of the Panama Canal. It fires a projectile weighing 2400 pounds, which would pierce the armor of a battleship at a distance of 22 miles.

OREGON
WASHINGTON
IDAHO
Scale of Miles
0 10 20 40 60
Columbia R.
Willamette R.
Snake R.
Deschutes R.
Umpqua R.
Rogue R.
Klamath R.
Owyhee R.
Malheur R.
Powder R.
Grande Ronde R.
Cascade Mts.
Coast Range
Blue Mts.
Cedar Mts.
Steens Mts.
Siskiyou Mts.
Calapooya Mts.
Mt. Hood
Mt. Jefferson
Mt. Thielsen
Mt. Scott
Mt. Pitt
Diamond Peak
Three Sisters
Mt. Adams
Mt. St. Helens
Mt. Rainier
Mt. Baker
Portland
Astoria
Salem
Eugene
Albany
Corvallis
Oregon City
McMinnville
Roseburg
Grants Pass
Medford
Ashland
Klamath Falls
The Dalles
Pendleton
La Grande
Baker
Hepner
Vinson
Heppner
Condon
Fossil
Prineville
Bend
Redmond
Madras
Sisters
Lakeview
Warner Lake
Summer Lake
Silver Lake
Fort Rock
Crescent
Burns
Harney
Ontario
Nyssa
Vale
Weiser
Payette
Caldwell
Nampa
Boise
Meridian
Kuna
Parma
Homedale
Marsing
Jordan Valley
Owyhee
Silver City
Murphy
Grand Ronde
Elgin
Joseph
Enterprise
Wallowa
Lostine
Union
Cove
Island City
North Powder
Cornucopia
Sumpter
Granite
Haines
Baker
Whitney
Unity
Durkee
Mineral
Weatherby
Bridgeport
Huntington
Brogan
Ironside
Malheur
Hereford
Canyon City
John Day
Prairie City
Austin
Long Creek
Hamilton
Alamo
Monument
Dayville
Mount Vernon
Beachcreek
Waterman
Mitchell
Richmond
Haystack
Haycreek
Grizzly
Lamonta
Antoue
Twickenham
Ashwood
Antelope
Shaniko
Mayville
Lost Valley
Condon
Hardman
Ukiah
Pilot Rock
Meacham
Gilgard
Pendleton
Umatilla
Echo
Stanfield
Juniper
Helix
Adams
Athena
Weston
Freewater
Milton
Walla Walla
Kennewick
Pasco
Yoyot
Castle Rock
Arlington
Lexington
Heppner
Ione
Douglas
Cecil
Wasco
Rufus
Moro
Erskineville
Grass Valley
Kent
Clem
Eightmile
Dufur
Tygh Valley
Hood River
Mosier
The Dalles
Celilo
Lyle
Grandalles
Dallesport
Chutes
Cascade Locks
Carson
Stevenson
Underwood
White Salmon
Bingen
Goldendale
Klickitat
Lyle
Wishram
Maryhill
Roosevelt
Columbia
Vancouver
Camas
Washougal
Ridgefield
Woodland
Kalama
Longview
Kelso
Rainier
Clatskanie
Quincy
Rainier
Scappoose
Warren
St. Helens
Columbia City
Deer Island
Goble
Mist
Vernonia
Clatsop
Westport
Knappa
John Day
Fort Stevens
Warrenton
Gearhart
Seaside
Nehalem
Bay City
Tillamook
Garibaldi
Hobsonville
Forest Grove
Cornelius
Hillsboro
Beaverton
Tualatin
Gaston
Sherwood
Dundee
Newberg
Dayton
Lafayette
Yamhill
Carlton
Sheridan
Willamina
Grand Ronde
Siletz
Toledo
Yaquina
Newport
Waldport
Florence
Reedsport
Scottsburg
Gardiner
Sutherlin
Oakland
Drain
Yoncalla
Elkton
Comstock
Sulphur Springs
Wildwood
Disston
Bohemia
Cottage Grove
Hazeldell
Creswell
Lorane
Eugene
Springfield
Coburg
Marcola
Wendling
Sweet Home
Lebanon
Berlin
Sodaville
Brownsville
Halsey
Harrisburg
Junction City
Monroe
Alpha
Irving
Walton
Goshen
Alma
Earl
Ada
Sulphur Springs
Gardiner
Reedsport
Florence
Acme
Deadwood
Heceta
Reed
Angora
Lutgens
Ona
Wedderburn
Goldbeach
Ophir
Agness
Illahe
Hugo
Merlin
Wolf Creek
Leland
Rogue R.
Grants Pass
Central Point
Jacksonville
Medford
Phoenix
Talent
Applegate
Kerby
Harbor
Waldo
Chetco
Brookings
Gold Beach
Rockpoint
Woodville
Whiner
Butte Falls
Eagle Point
Ft. Klamath
Leeds
Derby
Asbestos
Glendale
Canyonville
Prospect
Crater Lake
Crater L.
Diamond Peak
Roslan
Lava
Deschutes R.
Crooked R.
Opal City
Hillman
Grizzly
Lamonta
Haystack
Haycreek
Mitchell
Waterman
Antoue
Beachcreek
Fox
Dayville
Mount Vernon
Prineville
Bend
Redmond
Madras
Sisters
Lakeview
Warner Lake
Warner Lakes
Plush
Adel
Bonanza
Lorella
Merrill
Langells Valley
New Pine Creek
Klamath Falls
Dairy
Royston
Bly
Summer Lake
Silver Lake
Fort Rock
Crescent
Fremont
Arrow
Egli
Silver L.
Alkali L.
Summer L.
L. Albert
Paisley
Andrews
Steens Mts.
Malheur L.
Harney L.
Silver Creek
Riley
Burns
Harney
Riverside
Skullspring
Juntura
Drewsey
Van
Seneca
Beulah
Westfall
Vale
Ontario
Nyssa
Arcadia
Owyhee
Jordan Valley
Shearville
Diamond
Voltage
Smith
Narrow
Venator
Wayerly
Harriman
Lawen
Malheur L.
Harney L.
Silver Creek
Riley
Burns
Harney
Riverside
Skullspring
Juntura
Drewsey
Van
Seneca
Beulah
Westfall
Vale
Ontario
Nyssa
Arcadia
Owyhee
Jordan Valley
Shearville
Diamond
Voltage
Smith
Narrow
Venator
Wayerly
Harriman
Lawen
Albertson
Andrews
Steens Mts.

land, surrounded by forest-covered mountains. Southward is a series of similar valleys. The principal river is the Columbia, which for 300 miles forms the northern border of the State, and affords steam navigation. It has numerous tributaries, many of them navigable. The principal metallic ores are those of copper and iron. There is also considerable lignite coal and gold and silver in small quantities, potters' clay, glass-sand, granite, marble, and other useful mineral substances are abundant. Western Oregon has an abundant rainfall and is well adapted to agriculture, yielding the best grades of winter wheat, barley and oats, but corn does not thrive, the summer being too cool. Hay is produced abundantly and wool-growing and cattle-raising are important. Hops are a very large crop, being grown chiefly in the Willamette Valley. Fruit is a large product, especially apples, plums and prunes, which grow in the region between the Cascade and Coast mountains. Peaches and figs grow in the southwest. Flax is cultivated for seed and fiber, and yields largely. In the Willamette Valley livestock of every kind thrives. The chief crops are wheat, oats, barley, potatoes and hay, while the wool yield is very large. Salmon and trout are common in the streams and the annual salmon catch in the Columbia is very large. The principal mountain ranges are densely wooded with a great variety of trees, some of gigantic size. The great Douglas fir yields the best masts and spars in the world. This abundance of forest trees renders lumbering one of the most important industries, while the tanning of leather and making of boots and shoes, saddlery and harness are also of much value. Of animal products, those of the fisheries stand first, the salmon-canning yielding a large annual product. The University of Oregon is at Eugene, the Pacific University at Forest Grove, and there are various other educational institutions. Among the population are several thousand Indians belonging to small tribes. Capital, Portland. Pop. 672,765.

Oreide (o′re-īd), an alloy of copper, tin, magnesium, etc., or of copper, zinc and magnesium, with a few minor ingredients, used in the manufacture of cheap jewelry, as an imitation of gold.

Orel (Russian pron. år-yol), a central government of Russia, south of the Tula and Kaluga; area, 18,042 sq. miles. Its surface, though flat, is elevated, and the soil raises grain and hemp in abundance, and some good hops and tobacco. Live-stock, particularly horses, are extensively reared from improved breeds. Manufactures are chiefly confined to the distillation of spirits. The principal rivers are the Oka, the Desna, and the Sosna. Orel, or Orlov, the capital, on the Oka, is an important business center, the river and canals giving it water communication with the Black Sea, the Caspian, and the Baltic. Its trade in grain, dairy produce, and cattle with Moscow and St. Petersburg is very extensive. Manufactures are also increasing, and the town is making rapid progress. Pop. 70,075.

O'Reilly, John Boyle, poet, born in County Meath, Ireland, in 1844; died in 1890. Enlisting in the army for the purpose of spreading revolutionary doctrines among the soldiers, he was arrested, tried for treason, and exiled for 20 years to Australia. He escaped the following year (1869), sought the United States and became editor and chief owner of the Boston *Pilot.*

Orellana (o-rel-yä′nå), Francisco, a Spanish companion of Pizarro, the first of navigators to sail down the great Amazon River, which sometimes received his name.

Orelli (ō-rel′i), John Caspar, a distinguished Swiss philologist and critic, born at Zürich in 1787; died in 1849. In 1806 he was ordained to the pastorate of the Reformed Church at Bergamo in Italy. From 1813 to 1819 he held a professorship at the college of Coire, when he took the chair of eloquence and hermeneutics at the Carolinum, in Zürich. His reputation rests principally on his editions of the Greek and Roman classics (especially Horace), which have attained a well-merited celebrity.

Orenburg (å-ren-börg′), a government of Eastern Russia, partly in Europe and partly in Asia, with an area of 73,816 sq. miles; pop. 1,836,500. A very large part of the surface consists of steppes, but the agricultural districts in the northwest supply large quantities of grain for export. The drainage is partly to the Arctic Ocean, partly to the Caspian, the chief rivers being the Tobol and the Ural. Gold abounds along the whole Ural chain, and there are also copper, iron and salt mines. The population consists chiefly of the Finnish Votiaks and Tepyaks, and the Tartar Bashkirs, a large section being Mohammedans. The capital, Orenburg, on a slope above the right bank of the Ural, has, besides vast tallow melting establishments, woolen, soap and leather factories, and a large caravan trade with Khiva and Bokhara. Pop. 72,740.

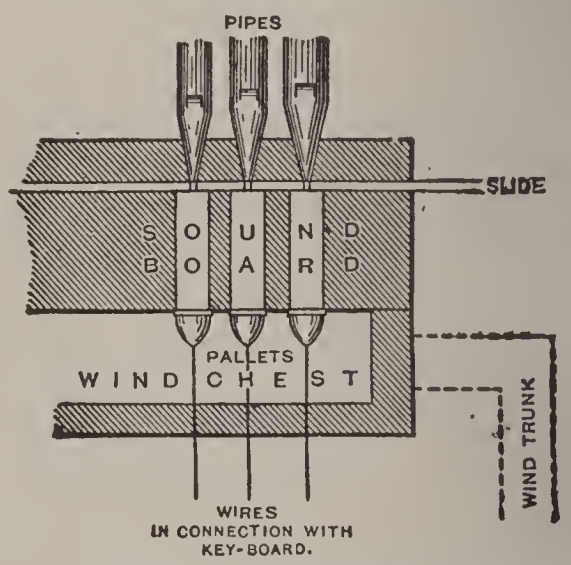
Orense (ō-ren'sā), a city of N. W. Spain, Galicia, capital of the province of same name, and see of a bishop, on the left bank of the Minho, here crossed by an old and remarkable bridge, built in 1230. It is a very ancient place, and has an interesting old Gothic cathedral and three warm springs (154° Fahr.). It has no commercial importance. Pop. 15,194.—The province has an area of 2739 sq. miles, and a pop. of 404,311. It raises a good deal of maize, and has mines of tin, copper and iron.

Orestes (ō-res'tez), in Greek mythology, the son of Agamemnon and of Clytemnestra, the avenger of his father, by becoming the murderer of his mother. For this murder he is relentlessly pursued by the Eumenides or Furies, and only succeeds in appeasing these terrible goddesses by carrying out the instructions of the Delphian oracle to bring back the statue of Diana from Tauris to Argos. Married to Hermione, daughter of Menelaus, Orestes ruled over his paternal kingdom of Mycenæ, and over Argos, upon the death of its king. Orestes is an important figure in the *Choëphori* and the *Eumenides* of Æschylus, the *Electra* of Sophocles, and the *Orestes* and *Iphigenia in Tauris* of Euripides.

Orfila (or-fī'la), Matthew Joseph Bonaventure, a Parisian physician and chemist, born in 1787, at Mahon, in the island of Minorca; died at Paris in 1853. After taking his degree of M.D. in Paris, he delivered lectures on botany, chemistry and anatomy, which, along with his medical practice, soon gave him a high reputation and a prominent position. Having been naturalized in France in 1818, he was next year appointed professor of medicine and toxicology at Paris, and in 1823 became professor of medical chemistry and medical jurisprudence. Louis XVIII appointed him his body physician, and Louis Philippe bestowed further honors on him. He wrote several important works on toxicology and medical jurisprudence; his *Leçons de Médecine Légale* and his *Traité de Toxicologie* were translated into most of the languages of Europe.

Orford, Earl of. See *Walpole.*

Organ (ōr'gan; Greek *orgănon*, an instrument), a wind instrument of music, the grandest of musical instruments, the introduction of which into the church service has undoubtedly exercised a powerful influence on the development of musical art. It is stated to be of very ancient origin, but is most probably the offspring of the *hydraulicon* or *water organ* of the Greeks. The early organs were very imperfect instruments, but improvements were naturally made from time to time, the most notable being those of the sixteenth century, when the bellows were much improved and the division of all the pipes into different stops invented, and the tone of the instrument adapted to the choir. The invention of the *windchest* in the seventeenth century, by which an equal pressure of wind can be obtained from all the bellows, led chiefly to the present perfect state of the organ. The three essentials of an organ are: (1) a chest of compressed air; (2) a set of pipes producing musical sounds in communication with this chest; and (3) a keyboard or clavier, by means of which this communication may be opened or closed at pleasure. The air is forced into the windchest by means of bellows. To the upper part of each windchest is



Organ—Internal Arrangements.

attached a *sound-board*, a contrivance for conveying the wind to any particular pipe or pipes at pleasure, and divided into as many grooves as there are keys. Air is admitted into these grooves by means of valves or pallets, which are connected with the keys; the transmission of air being regulated by the *register* or *slide*. The series of pipes above each slider is called a stop. The principal stops of an organ are the *open*, *stopped* and *double* diapasons; the *principal*, *dulciana*, *twelfth*, *fifteenth*, *flute*, *trumpet*, *clarion*, *bassoon*, *cremona*, *oboe* and *vox humana*. An organ may have several windchests filled by the same bellows, and several keyboards, each keyboard and windchest representing a distinct organ. In the largest instruments the number of these organs generally amounts to five; viz. the *great organ*, the *choir organ*, the *swell organ*, the *solo organ* and the *pedal or-*

gan. The keyboards for the hand are termed *manuals*, that for the feet the *pedal.* The most usual compass of the manuals is from CC to F in alt, four octaves and a half; that of the pedal from CCC to E or F, two and a quarter to two and a half octaves. There are two kinds of organ pipes—*flute* pipes or *mouth* pipes, and *reed* pipes, of each of which there are several species, the character and quality of their sound depending mainly on the material employed in their manufacture (wood or metal), their shape, and dimensions. A hydraulic engine has been adapted, with success, to the purposes of working the bellows, and it is now pretty generally adopted. In 1863 a contrivance was patented for transferring some of the work from mechanism to electro-magnetism. An organ built on this principle is termed an *electric organ.* The principal advantages of this description of organ are that it facilitates the playing, and enables the organist to sit at a keyboard at a distance from the instrument. A free reed instrument was introduced about 1860 by Mason and Hamlin, of New York, known as the *American organ*, differing from the harmonium in having smaller and more curved reeds and in drawing the air inwards. It is more easily blown than the harmonium, and its tones are of a more organ-like quality, but it is inferior to the latter instrument in variety of tone and power of expression. Within recent times many organs of great size and power have been constructed in various European and American cities.

Organ, ORGANIZATION. In biology, the term *organ* is applied to all the definite parts with special functions, forming as a whole the structure of a living body, whether animal or vegetable. The dissimilarity between the organs of which a living being is composed forms a very striking contrast to the structure of lifeless bodies. A lifeless body—such as a mineral—exhibits generally a sameness or homogeneity of structure. Its intimate parts or particles are usually of a similar kind or nature. Hence this broad and patent distinction has resulted in the employment of the terms *organic* and *organized* to express the characteristics of living beings; while to the lifeless part of creation the opposing term *inorganic* is applied. *Organization* thus means the possession of definite organs, structures, or parts, which have definite relations to each other; and an *organism* is a whole, an animal or plant, possessing such organs.

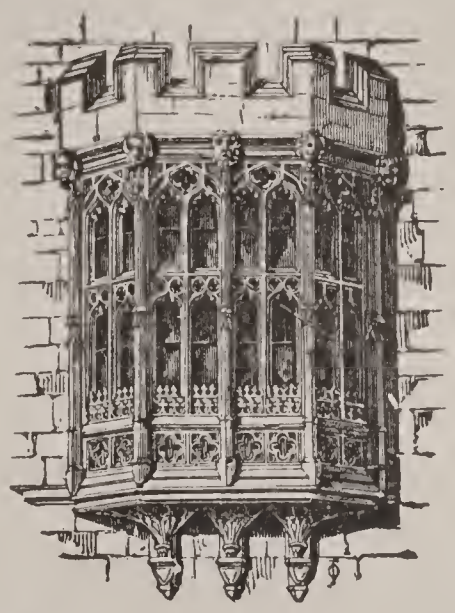
Organic Radicals, in chemistry, the name given to a number of compounds of carbon which act in many bodies as if they were truly elementary substances.

Organzine (ōr′gan-zin), a silk thread of several singles twisted together; thrown silk. See *Silk.*

Orgeat (ōr′zhat), a liquor or syrup extracted from barley (French, *orge*) and sweet almonds, used to mix with certain drinks or medicinally as a demulcent.

Orgies (ōr′jēz; Greek, *orgia*), anciently the mystic rites and wild revels celebrated in honor of Bacchus; also the festivals and mysteries of other Pagan deities. See *Bacchus* and *Mysteries.*

Oriel Window (ō′ri-el), a window projecting from the outer face of a wall, in plan semihexagonal, semioctagonal, or rectangular, thus having three or more sides, divided by mullions and transoms into different



Oriel Window, Balliol College, Oxford.

bays and other projections, and supported by brackets or corbels. A projecting window rising from the ground is sometimes called an oriel, but is more properly a bay-window.

Oriental (ō-ri-en′tal), eastern. The term is often applied to certain gems or precious stones as a mark of excellence, or to distinguish them from an inferior variety, in opposition to *occidental.*

Oriental Languages, the general designation at the present day for the languages of the nations of Asia, as also of the Mohammedan countries of Europe and Africa.

Orientation (ō-ri-en-tā′shun), a turning towards the east; the direction of something towards the

east. By ecclesiologists it is used in regard to the building of churches in a direction east and west, though often a deviation from the true east has been observed to exist in churches which had been supposed to stand for exactly east and west.

Oriflamme (or-i-flam), until Charles VII's reign, the royal standard of France, originally the banner of the abbey of St. Denis and its lord protector. When the French kings chose St. Denis as their patron saint, they made the oriflamme the principal banner of their armies. It was a piece of red taffeta fixed on a golden spear, in the form of a banner, and cut into three points, each of which was adorned with a tassel of green silk.

Origen (or'i-jen), ORIGINES, surnamed *Adamantios*, one of the greatest and most influential of the Greek fathers, born at Alexandria A.D. 185; died at Tyre 254. His father suffered martyrdom at Alexandria in 202 under the Emperor Severus, when Origen undertook the support of his mother and six children. He lectured with much success in Alexandria, and gained the patronage of Bishop Demetrius. His own studies were pursued with extraordinary zeal; he lived an ascetic life, and in order to be free from the lusts of the flesh he mutilated himself. A journey to Rome (211-212) greatly increased his reputation, and Christian communities in various countries vied with each other in securing his services. In 228 he went to Palestine; he was so well received, and so many favors were bestowed on him that his patron became jealous, recalled him to Alexandria, and finally deprived him of his priestly office, charged him with heresy, and expelled him from the city. These persecutions never ceased until the death of Demetrius in 231. In a new persecution, under the Emperor Decius, Origen, who was viewed as a pillar of the church, was thrown into prison, and subjected to the most cruel sufferings, ultimately resulting in his death. He has been reproached with having attempted to blend the Christian doctrines with the notions of Plato, and, without reason, of favoring materialism. He is credited with some 6000 works, including smaller tracts, but only a few have been transmitted to us, and some of these only in a distorted form. His work against Celsus is considered as the most complete and convincing defense of Christianity of which antiquity can boast. One of his works was the *Hexapla* (which see), but of it we have only fragments. A translation of his extant works into English has been published (Edinburgh, 1868-72).

Origenists (o r' i -jin-istz), Christian heretics in the fourth century, so called because they pretended to draw their opinions from the platonic notions in the writings of Origen. They first made their appearance in Italy in 397, with Rufinus of Aquileia as their teacher.

Original Sin (o-rij'in-al), in theology, the first sin of Adam, namely, the eating of the forbidden fruit; hence, either the imputation of Adam's sin to his posterity, or that corruption of nature and tendency to sin inherited from him. The Greek fathers held that a perverted will and sin are coördinate with the human race, and that death has dominion over it by reason of its origination from Adam after the fall. In the Latin Church the doctrine was more fully developed than in the Greek Church. Tertullian, in accordance with his doctrine of Traducianism, which holds that the soul as well as the body is generated by the parents, asserted that sin and death were alike propagated from Adam; he accordingly held an *originis vitium*, but without regarding it as actual sin or denying to man the possibility of goodness. Pelagius held that no change whatever had been brought about by the fall, that death was a part of man's original constitution, and that all men could render faultless obedience to the law of God, if they wished. Augustine succeeded in getting this doctrine condemned in favor of his own, which inculcated that 'Death was brought into the world by Adam's sin; man's free-will, the reflex of the divine will, was lost to him by the fall as regards good; there remained only spontaneity, the negation of outward constraint, and free-will as regards evil.' Pelagianism, however, sprung up again in a modified form, called semi-Pelagianism, and according to this view death and a taint of corruption were inherited from Adam as a disease might be, but man still retained a power for good without the aid of divine grace; a doctrine which obtained much support at the time. The reformers of the sixteenth century upheld the strictest view of original sin, though by no means unanimously, in opposition to the Roman Catholics, who at the Council of Trent gave their adhesion to the more liberal view of the doctrine. In recent times orthodox theologians, such as Olshausen, Hengstenberg and others, have stood up for the Augustinian doctrine, while those of the more liberal school have modified it in various ways. Philosophers as well as theologians have taken part in this controversy about original sin, it being a subject open to diverse opinions.

Origin of Species. See *Species.*

Orihuela (ō-rē-wā′lȧ), an ancient town of S. E. Spain, province Alicante, in a fertile plain on the Segura, 30 miles southwest of Alicante. It has a considerable trade in fruit, cereals, oil and wine. Pop. 28,530.

Orillia (ō-ril′li-ȧ), a town and summer resort on Lake Simcoe, Ontario, Canada, 86 miles N. of Toronto. Has various manufactures. Pop. 6828.

Orinoco (ō-ri-nō′ko), a river of South America, one of the largest in the world, rising in the Sierra del Parima, near lat. 3° 40′ N., long. 64° W., and after a circuitous course falling into the Atlantic opposite Trinidad; its principal mouth being 6 leagues wide; length about 1500 miles. The Orinoco is connected with the Rio Negro, a tributary of the Amazon, by the Cassiquiari, a natural canal joining the two rivers, and it receives the waters of many large rivers. During the rainy season it inundates the immense plains through which it flows, presenting to the eye a boundless expanse of waters. The scenery on its banks is magnificent beyond description. Two rapids occur in the upper part of the river; thence it is navigable to its mouths, which were declared open to international navigation October 29, 1900.

Oriole (ō′ri-ōl), a name popularly applied to two groups of birds, the one group included in the Conirostral section of the Insessores or perching birds, the other classified with the Dentirostral section. The American Orioles belonging to the former group are nearly allied to the starlings. The Baltimore bird (which see), oriole, or golden robin (*Ictĕrus* or *Hyphantes Baltimore*), is a familiar species of this group. Another, the orchard oriole (*Ictĕrus spurius*), is distributed very generally over the United States. The orioles proper, or those of the Old World, are nearly related to the thrushes. They are found in Asia, Africa, the islands of the Indian Archipelago, and Southern and Eastern Europe. The golden oriole (*Oriŏlus Galbŭla*) is the typical form, and the only European member of the group. The wings and tail of the males are black and contrast powerfully with the golden color of the body. In size it resembles a common thrush or blackbird. It chiefly inhabits Southern Europe, but is occasionally found in Britain. The song is loud, and resembles the sound of the flute.

Orion, (ō-rī′un), a hero of Greek mythology. According to Homer he was a beautiful youth, of whose charms Eōs (Aurora) became enamored. The gods were jealous of her love, and Artemis slew him with her arrows. According to other writers he was a great hunter of colossal stature, and died of the sting of a scorpion. The hero after his death was placed with his hounds in the heavens as a constellation, which bears his name.

Orion, a constellation situated in the southern hemisphere with respect to the ecliptic, but the equinoctial passes nearly across its middle. This constellation is represented by the figure of a man with a sword by his side. It contains seven stars, which are very conspicuous to the naked eye; four of these form a square, and the three others are situated in the middle of it in a straight line, forming what is called the *Belt of Orion*, and popularly the *Ell-wand* or *Yard-wand.* Orion also contains a remarkable nebula, and eighty stars according to the British catalogue, but there are thousands of others which are visible only through powerful telescopes.

Oris′sa, a maritime province of Hindustan, lying on the Bay of Bengal, between Bardwan and the Madras Presidency, forming a division or commissionership under the jurisdiction of the lieutenant-governor of Bengal. It has an area of 9053 square miles, and includes the three districts of Balasore, Cattack and Puri, and a number of tributary states. The surface along the shore is in general low and sandy, and in the interior wild and rugged. The inhabitants are composed chiefly of Oorias, the conquerors of the country; and of wild hill tribes. The largest river is the Mahánadi. The chief towns are Cattack, Puri or Juggernauth and Balasore. Pop. 5,003,121.

Oristano (or-ēs-tä′nō), a city of the island of Sardinia, on the west coast, the see of an archbishop. Pop. 7107.

Orizaba (ō-rē-sä′va), a town of Mexico, state of Vera Cruz, 65 miles W. S. W. of Vera Cruz. It lies in a fertile valley, 3975 feet above sea-level, and is a rapidly-improving trade center. Tobacco, grown nearby, is largely manufactured, also leather and woolen cloths. In its vicinity is the extinct volcano, the Pico de Orizaba, 17,665 feet high. Pop. 32,894.

Orkney Islands (ork′nē) (the ancient *Orcădes*), a group lying off the northern coast of Scotland, and separated from it by a channel called the Pentland Firth, about 6 to 8 miles broad; aggregate area, 375 square miles. There are 67 islands and islets, 28 of which are inhabited. Pomona or Mainland is the largest of the group; others of considerable size are: Hoy, South and

North Ronaldshay, Westray, Sanday, Eday, Stronsay, Rousay and Shapinshay. Excepting Hoy, none of th islands have hills of any height; there are no large streams, but many lakes and springs. Trees scarcely exist. The rocks belong to the Old Red Sandstone formation, and clay and peat-moss abound. The climate is moist but not cold, being remarkably mild in winter. Agriculture, pasturing and fishing are the supports of the inhabitants, manufactures being restricted to hosiery, chiefly hand-made by women. The fisheries are vigorously prosecuted. Agriculture is not in a flourishing condition, and the crofters of the islands were included in the Crofters' Act of 1886. The chief town is Kirkwall. It is probable that the Picts originally possessed the islands, but in the eighth century and subsequently they were occupied by the Northmen. In the ninth century Harold Haarfager attached them to Norway, and for several centuries they were ruled by jarls or earls, who sometimes owed allegiance to Norway, sometimes to Scotland. About the middle of th thirteenth century they were transferred to Alexander, king of Scotland; but the Norwegians continued to assert their sovereignty. James III of Scotland received the islands as a dowry with Margaret of Norway in 1469, and ever since they have belonged to Scotland. The Orkney and Shetland Islands form together one county. Pop. 28,698.

Orlando Furioso. See *Ariosto.*

Orlando Innamorato. See *Boiardo.*

Orléanais (or-lā-à-nā), a former province of France, now forms the departments Loir-et-Cher and Loiret, and parts of Eure-et-Loir Nièvre, Seine-et-Oise, Sarthe, Indre-et-Loire and Cher.

Orléans (or-lā-äṇ), a city of France, formerly capital of Orléanais, now of the department of the Loiret, situated on the right bank of the Loire, 68 miles southwest of Paris. It has some handsome public squares, a Gothic cathedral, two hôtels-de-ville, a palais de justice, and other notable buildings. The manufactures and trade of the place have much declined; confectionery, pottery and woolen goods are the staple articles of manufacture. Philip of Valois erected Orléans into a duchy and peerage in favor of his son, and Orléans has since continued to give the title of duke to a prince of the blood-royal. In 1428 the city sustained a siege against the English, and was relieved by the Maid of Orléans (see *Joan of Arc*), whose statue in bronze stands in one of the public squares. It was taken and retaken more than once in the Franco-German war in the latter part of 1870. Pop. 57,544.

Orléans, a French royal family, two houses of which have occupied the throne of France. (1) On the death of Charles VIII without issue in 1498, Louis, duke of Orléans, great-grandson of their common ancestor Charles V, and grandson of the first Duke of Orleans, being the nearest heir, ascended the throne under the title of Louis XII. Henry III (died in 1589) was the last sovereign of this house, or the *Valois-Orléans* branch. (2) The house of *Bourbon-Orléans* is descended from Philip, duke of Orléans, son of Louis XIII and younger brother of Louis XIV. His son Philip, duke of Orléans, was regent of France during the minority of Louis XV. His grandson, Louis-Philippe Joseph, who assumed the surname of *Egalité*, was beheaded in 1793. (See article below). Louis Philippe, duke of Chartres, afterwards king of the French, was the son of *Egalité*. The grandson of Louis-Philippe, the Cómte de Paris, born in 1838, and educated in England, was long the head of the royal house and royalist party of France. See *Bourbon* and *Paris, Comte de.*

Orléans, Henri, Prince of, son of the Duke de Chartres, was born in 1867. Excluded from France by the exiling all members of the old royal famlaw exiling all members of the old royal family, he became after 1887 an active traveler, traversed India, explored Thibet with Bouvalet, and traveled in Arabia, Madagascar, Tonkin and Abyssinia. He won high honor from the geographical societies of France and other countries for his explorations and discoveries. He wrote *Six Months in India, Tiger Shooting*, and, with Bouvalet, *From Paris to Tonkin, Across Unknown Thibet.*

Orléans, Jean Baptiste Gaston, Duke of, third son of Henry IV of France, and Mary of Medici, born in 1608; died at Blois in 1660. His early education was miserable, and the cause of the feebleness of character which he displayed through life, although he had received from nature much more of his father's spirit than his brother Louis XIII. The latter was jealous of the duke, and opposed him in many ways, while the duke retaliated by intriguing against the king; and but for Richelieu, who was a greater power in the state than the royal family itself, might have succeeded. By his first marriage, with Mary of Bourbon, heiress of the house of Montpensier, he had a daughter, the author of some interesting memoirs. During the disturbances of the Fronde he joined De Retz, the soul of the Fronde, who, however, soon saw

through the character of his fickle and feeble confederate. After the termination of the troubles (1648) the duke was banished to Blois.

Orléans, Louis Philippe Joseph, Duke of (*Egalité*), great-grandson of the regent, Philippe, duke of Orléans, was born in 1747; married in 1769 the daughter of the Duke of Penthièvre. He was notorious for his dissoluteness of manners, and the extreme, though vacillating political conduct by which he courted popularity. His opposition to the court began in 1771, and he became the rallying point of its enemies. In 1787 he was exiled for the part he took in the Assembly of Notables; in 1789 he was one of the nobles who joined the Tiers Etat (Third Estate); in 1792 he went over to the revolutionary party without reserve, took the name of *Philippe Egalité* ('Philip Equality'), and voted for the death of Louis XVI. It did not save him from being arrested as a Bourbon, condemned and beheaded, November 6, 1793.

Orléans, Maid of. See *Joan of Arc*.

Orléans, Philippe, Duke of, only brother of Louis XIV of France, and founder of the house of Bourbon-Orléans, which for a short time held the throne of France, was born in 1640; died in 1701. In his twenty-first year he married Henrietta of England, sister of Charles II. The great esteem which the king showed for this princess excited the jealousy of his brother, and her sudden death was attributed to poison, to the administration of which the duke was suspected of being accessory. His jealousy seems not to have been unfounded. The second marriage of the duke, with the Princess Elizabeth of the Palatinate (1671), was arranged by Louis to secure the neutrality of the Elector Palatine in the approaching war against Holland. In this war the duke distinguished himself in spite of his effeminacy.

Orléans, Philippe, Duke of, Regent of France, son of Philippe, duke of Orléans (see preceding article), and the Princess Palatine Elizabeth, born in 1674; died in 1723. He fell early under the influence of the clever and unscrupulous Abbé (afterwards Cardinal) Dubois, who continued his confidant and adviser through life. He made his military début at the siege of Mons (1691), and in 1693 distinguished himself at Neerwinden, but only to arouse the jealousy of Louis XIV, his uncle, who compelled him to retire from the army. In 1692 he married Mdlle. de Blois, the legitimated daughter of Louis. In 1707 he was appointed to succeed the Duke of Berwick in Spain, and completed the subjugation of that country. He was recalled, however, being suspected of intriguing for the crown of Spain, and again forced into retirement. On the death of the king (September 1, 1715) he was appointed regent. On acceding to power the regent found the finances in extreme disorder, and endeavored to improve matters by retrenchment and peace; but his reckless introduction of a vast paper currency brought the nation to the verge of bankruptcy. He resigned the government to Louis XV on February 13, 1723.

Orloff (or-lof'), a Russian noble family, of whom the following members may be mentioned:—Gregory Orloff, born in 1734; died in 1783, assisted the Grand-princess Catharine in the revolution, by which she was declared empress (Catharine II), and her husband, the Emperor Peter III, deprived of life. Orloff soon attained the highest dignities and became enormously rich.—Alexis, his brother, born in 1737; died in 1808, is famous for his devotion to the empress, as one of the murderers of Peter III, and as the admiral who defeated the Turkish fleet off Tschesme.—Alexis Fedorovitch, prince, a descendant of the same family, born in 1787; died in 1861. In 1825 he gained the favor of Nicholas I by assisting to suppress the revolt of the guards on his accession. He held a cavalry command in the Turkish campaign of 1828, and assisted in suppressing the Polish insurrection in 1831; he also rendered successful diplomatic service, especially at Constantinople. In 1844 he was appointed chief of the gendarmes and secret police. He was the confidential friend of the emperor.

Orlop Deck (or'lop), the lowest deck in a ship of several decks, consisting of a platform laid over the beams in the hold whereon the cables are usually coiled. In trading, vessels it is often a temporary deck.

Ormer (or'mėr; French *oreille de mer*, 'sea-ear'), the ear-shell, a large marine univalve shell-fish belonging to the genus *Haliōtis*, common on the shores of the Channel Islands, where it is cooked after being well beaten to make it tender. The pearly interior of the shell has made it a favorite ornament.

Orme's Head, Great, a bold projecting headland in North Wales, at the mouth of the river Conway, surrounded on nearly all sides by the sea.

Ormolu (or'mō-lö; French, *or moulu*, literally 'ground gold') is in English frequently applied to a metal

compounded of copper and zinc (mosaic gold), nearly resembling brass, but having a color more like that of gold. In French *or moulu* signifies a paste of gold and mercury used for gilding, and the color imparted to a surface by that paste.

Ormonde, DUKE OF. See *Butler, James.*

Ormskirk (ōrmz'kirk), a town of England in Lancashire, 13 miles N. N. E. of Liverpool. Its chief occupations are brewing and rope-making. There are large collieries in the neighborhood. Pop. 7409.

Ormuz (ōr'muz), or HORMUZ, an island in the Persian Gulf, on the north side, near its entrance, about 15 miles in circumference. It is entirely destitute of vegetation and is only noticeable as having once been a great trade center. It was held by the Portuguese from 1515 to 1622. A few ruins are all that is left of its former wealth and splendor.

Ormuzd (ōr'muzd; *Ahuramazda*, the Oromasdes of the Greeks and Romans), the name of the supreme deity of the ancient Persians. According to the doctrine of Zoroaster he was the lord of the universe and the creator of earthly and spiritual life, the source of light, wisdom, and intellect, and the giver of all good. He rewards the good and punishes the wicked. See *Zoroaster.*

Orne (ōrn), a department in Normandy, France; area, 2354 square miles. It receives its name from the river Orne, which rises in this department, and passing through that of Calvados falls into the English Channel (length, 95 miles). The surface is traversed by a lofty ridge, mostly covered with forests. The soil is various; oats, flax, hemp, beet, fruits and cheese are the chief produce, and a good breed of Norman horses is reared. It manufactures needles, pins, wire, porcelain, cotton and linen cloths, and has valuable granite quarries. Alençon is the capital. Pop. 315,993.

Ornithodelphia (ōr-ni-thō-del'fi-a), the name given to the subclass of mammals represented by the single order Monotremata, including only two species, the ornithorhynchus and echidna.

Ornithology (ōr-ni-thol'ō-ji; Greek, *ornis, ornīthos*, a bird, *logos*, discourse), that branch of zoölogy which treats of birds. Birds (Aves) form the second class of the great division of vertebrate animals, the connecting link between the Mammalia and Reptilia, but are more closely allied to the latter. In common with the Mammalia they have warm blood, though of a higher and uniform temperature (8°-12° higher), a heart with two auricles and two ventricles, and breathe by lungs; but differ from them in having feathers for a covering, two feet, wings, by which most of them are enabled to fly, a horny bill, and reproduction by eggs. The feathers, the development of which resembles essentially that of hair, constitute appendages of a unique kind, as being developed only in connection with the bird-class. The under plumage of most birds is formed by a thick coating of small shaftless feathers, embedded in the skin and called *down.* Various names are given to feathers according to their position; thus the long quills on the part of the wing corresponding to the hand are called *primaries*, those on the lower forearm *secondaries*, and those on the upper part of the forearm *tertiaries*, those on

PLUMAGE OF BIRD

Bohemian Chatterer (*Bombycilla garrula*).
a, primaries; *b*, secondaries; *c*, coverts; *d*, scapulars; *e*, tail feathers; *f*, forehead; *g*, sinciput; *h*, occiput.

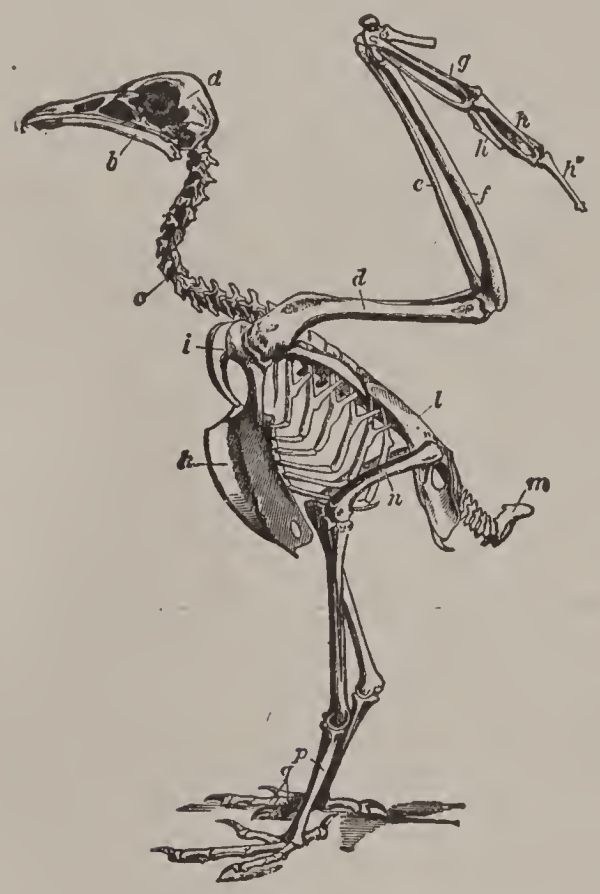
the shoulder-blade and humerus *scapulars.* The feathers covering the bases of the wing quills are called *wing-coverts*, and those covering the *rectrices*, or great feathers of the tail, *tail-coverts.* Birds moult or renew their feathers periodically, and in many cases the winter plumage displays a different coloring from the summer plumage. The plumage in most cases is changed frequently before it attains its characteristic and full-grown state.

The mouth of birds takes the form of a beak or bill; the jaws or *mandibles* are hard and horny, and more or less prolonged into a point, while there are no fleshy lips and no teeth (except in certain fossil birds); a horny sheathing, generally smooth, but sometimes serrated, takes the place of the latter. The beak is variously modified in accordance with the habits of the bird and the nature of the food on which it subsists. The sense of taste is

THE VESPER SPARROW AT HOME

SWAMP SPARROW'S NEST

not keen, their tongue being generally slender, pointed, and more or less horny, though some birds, as the parrots, have it fleshy. The nostrils open upon the side, or at the base of the beak. Their sense of smell is often very delicate. A circle of naked skin called the *cere* in many birds surrounds the base of the mandibles. The sight of birds is extremely keen, and equally adapted for near and for distant objects. A peculiar feature in the eye is the *nictitating membrane*, a sort of third translucent eyelid which rests in the inner angle of the eye, but can be drawn over it so as to protect it from too strong a



Skeleton of Egyptian Vulture

(*Neophron percnopterus*), to show bones of bird.

a, post-orbital process; *b*, lower jaw; *c*, cervical vertebræ; *co*, coracoid bone; *d*, humerus; *e*, radius; *f*, ulna; *g*, metacarpus; *h*, second phalanx of chief digit of wing; *h*, phalanges of lower digit; *h''*, first phalanx of chief digit; *i*, clavicle; *k*, sternum; *l*, pelvis; *m*, coccyx; *n*, femur; *o*, tibia; *p*, tarso-metatarsus; *q*, phalanges of foot.

light. Birds have no external ear, with the exception of the nocturnal tribes; these have a large exterior *conch* in the form of a thin leathery piece of flesh. The internal ear is very large, and the sense of hearing acute.

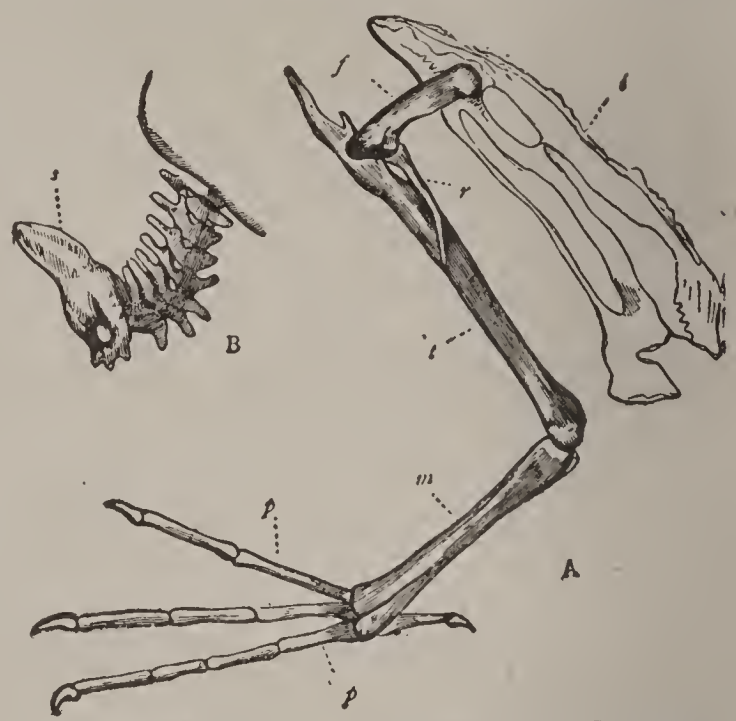
The bone tissue of birds is light and compact. The bones are whiter and contain a larger proportion of phosphate of lime than those of the Mammalia and lower vertebrates. The bones of most birds are *pneumatic*, that is, contain air instead of marrow, to adapt them for flight; the air being admitted by means of special apertures which are connected with certain sacs, termed *air cells*, filled with air from the lungs. In many birds, however, the long bones are filled with marrow, as are also all the bones of young birds. The humeri, cranial bones and sternum are most generally pneumatic, the femora more rarely so. The vertebræ vary considerably in number in different species. The neck is always more or less elongated and flexible, and consists of from 9 to 23 vertebræ. The dorsal region, or region of the back, is composed of from 4 to 9 vertebræ, and is generally firm, forming a support for the movements of the wings. In all birds the neck is of sufficient length to reach the *oil-gland* situated at the tail, the secretion of which is used for 'preening' or dressing the feathers. The vertebræ interposed between the dorsal vertebræ and those of the tail are united to form the sacrum, the number of vertebræ which may coalesce varying from 9 to 20. The caudal or tail vertebræ may number ten, the last two or more of which unite to form a bone, called from its shape, 'ploughshare' bone. In some species this bone is absent, undeveloped, or modified. The bones of the skull become firmly united at an early period, so as to leave few or no sutures or lines of union, as in mammals, a complete bony case being thus formed. The skull is joined, as in reptiles, to the spinal column and by a single process, or condyle, of the occipital bone, or hindermost bone of the skull. The chest or thorax is enclosed posteriorly by the dorsal vertebræ, laterally by the ribs, and in front by the sternum or breastbone and the sternal ribs. The ribs correspond in number with the dorsal vertebræ, from 6 to 9 pairs of ribs being thus found in birds, the first two being generally unattached, that is, they do not reach the sternum in front. The sternum is large and strong, and serves as the point of attachment for the most powerful of the muscles by which the wings are set in motion. It is provided with a medial crest or *keel*, which is most prominent in the birds of most powerful flight, and is altogether absent in the ostrich and cassowary, birds which do not fly. Upon the upper or anterior portion of the sternum the *coracoid bones* are borne, which form the chief supports of the fore limbs. At its upper portion each coracoid bone articulates with the scapula or shoulder-blade, and with one of the clavicles. The clavicles or collar bones are united in most birds to form the *furculum* or merry-thought. The bird exhibits the essential

A BLUEBIRD LOATH TO LEAVE HER NESTLINGS

SPARROW HAWK

skeletal elements found in the fore limb of all other vertebrates. The humerus, or bone of the upper arm, is generally short; the forearm, composed of the radius and ulna, being the longest segment of the fore limb. The ulna is larger and better developed than the radius, which is slender and attenuated. In the bones which form the extremity of the wing we recognize the rudiments of a thumb and two fingers, one of which has two phalanges and the other only one. The femur or thigh is short, the tibia or shin-bone forming the chief element, in the leg; while the fibula is attenuated and generally ossified to the tibia. The toes generally number four; the hallux or great toe, when present, being composed of two phalanges, and the other toes of three, four and five phalanges respectively. The muscles of birds are firm and dense, and are generally colored deep red. The chief body muscles are the pectorals, or those of the breast, which are devoted to the movements of the wings.

There are three stomachs or stomachic dilatations in birds; the first is the *crop*, a considerable pouch attached to the *œsophagus* or *gullet;* then the *ventriculus succenturiatus*, a slight dilatation of the œsophagus, with thick and glandular walls; then immediately after this is the *gizzard*, a strong and muscular cavity. In granivorous birds the crop is large, and serves as a reservoir for the seeds swallowed by them, which are here moistened by a secretion before passing into the gizzard. In these birds the gizzard is extremely strong, having to perform the task of grinding down the hard substances subjected to its action, a process which is facilitated by the small stones which these birds generally swallow. The ventriculus secretes the gastric juice, and so far represents a real stomach. In birds which live on flesh or fish the gizzard is weaker and less distinct from the ventriculus; while the crop becomes smaller, and in some species completely disappears. The intestinal canal is relatively smaller than in Mammalia and presents fewer circumvolutions. It terminates in an opening called the *cloaca*, which is also the common termination of the ureters and oviduct. The liver is generally large, and colored a distinct brownish hue, which is deepest in aquatic birds. A gall bladder is absent in a few cases only, as in the ostrich, pigeons, and some parrots. The kidneys are two in number, of large size and elongated shape. The urine consists in greater part of earthy matters, and contains but a small proportion of water, hence its whitish appearance. The spleen is usually of small size, rounded or oval, but may also be elongated or broad and flattened. The heart is highly muscular, four-chambered; the blood, deep-red in color, circulates rapidly and vigorously. The lungs are confined to the back portion of the body, and are attached to the ribs, instead of being free, as in Mammalia. They are not divided into lobes, and are usually of a bright-red color. They are enveloped in a membrane pierced with large holes, which permit the air to pass into the cavities in the breast and in the abdomen, and, in some species, even into the interior of the bones. The



A, Pelvis and bones of the leg of the Loon or Diver (after Owen); *i*, Innominate bone; *f*, Thigh-bone (*femur*); *r*, Tibia; *r*, Fibula, together forming the shank; *m*, Tarso-metatarsus; *p* Phalanges of the toes. B, Tail of the Golden Eagle; *s*, Ploughshare-shaped bone, carrying the great tail-feathers.

trachea or windpipe is of great relative length in birds, and is adapted to the length of the neck. The nervous system evinces a marked superiority over that of reptiles. The cerebrum, or true brain, is larger than in the latter, but its surface is not convoluted, as in most Mammalia. The generative organs consist of the essential organs or testes of the male, accompanied in some cases by an intromittent organ. The female organs consist of an ovarium and oviduct. The eggs are hatched by the process of *incubation*. Very great differences exist in the size, form and number of eggs which may be produced by birds, and in the time required for their hatching. The varieties of nests in which they are deposited, as to mode and materials used in construction, are endless.

THE CATBIRD

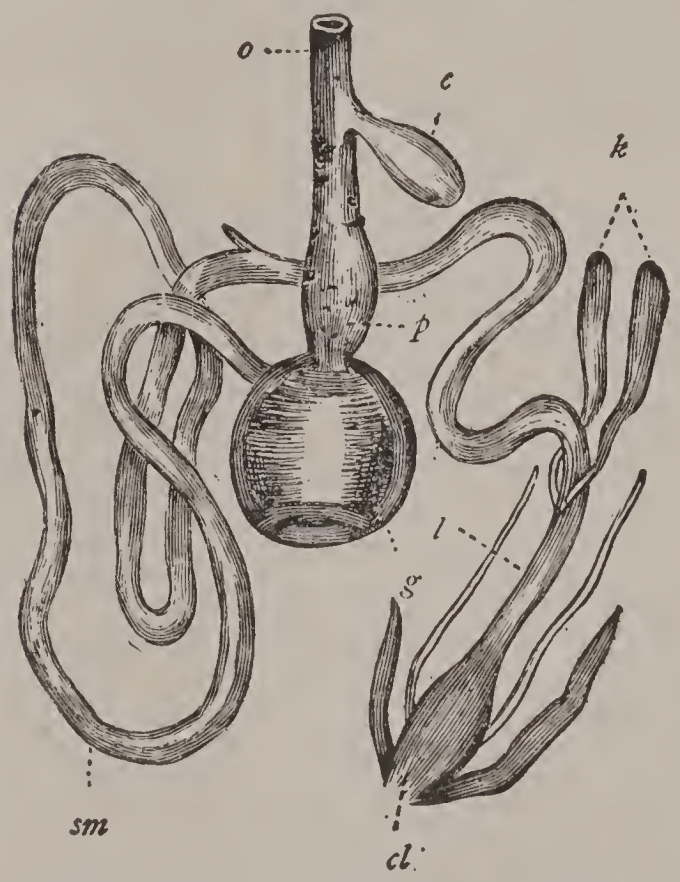
WOOD THRUSH AT HER NEST

Many birds migrate at certain seasons from one country to another, and a recent report on migration shows, that with very few exceptions there is scarcely a bird of either the palæarctic or nearctic regions that is not, to a greater or less degree, migratory in some part or other of its range. See *Migration*.

As for the classification of birds, many systems have been proposed. The chief older division is into seven orders, to which an eighth, the *Saururæ* of Huxley, is often added, to include the extinct archæopteryx. These orders are:—

Order I.—Raptores or *Accipitres*. Birds of Prey, as eagles, vultures, hawks and owls. Beak strong and curved, sharp at the edges. Feet adapted for seizing and destroying other animals. Claws sharp, much hooked and retractile. Hind toe on the same level with the others. Wings well developed.

Order II.—Insessores, *Passeres*, or Perching Birds, by far the most numerous order. It includes all the singing birds, and indeed, excluding the birds of prey, most birds which live habitually among trees. Feet formed for grasping and perching, claws moderately curved and not retractile. Hind toe on the same level as the rest. This order is usually divided into four *tribes* or suborders: *Conirostres* (cone-billed); *Dentirostres* (tooth-billed); *Tenuirostres* (Slender-billed); *Fissirostres* (cleft-billed).



Digestive system of the common Fowl (after Owen). *o*, Gullet; *c*, Crop; *p*, Proventriculus; *g*, Gizzard; *sm*, Small intestine; *k*, Intestinal cæca; *l*, Large intestine; *cl*, Cloaca.

Order III.—Scansores or *Zygodactyli*. Climbing Birds, as the parrots, woodpeckers, cuckoos, toucans, etc. Feet formed for climbing, two of the toes directed forward and two backward; powers of flight not in general great; bill variously shaped.

Order IV.—Rasores or *Gallinæ*. Domestic Fowls, Pheasants, Pigeons, etc. Legs large and strong. Feet with the hind toe situated above the heel, suited for scratching. Bill short, thick and arched above.

Order V.—Cursores or *Struthionidæ*. Running Birds, as the ostrich, emu, cassowary, etc. Wings rudimentary and quite useless for flight; legs long and strong; hind toe wanting or merely rudimentary; breastbone without a ridge or keel.

Order VI.—Grallatores or *Grallæ*. Waders, as the cranes, herons, snipes, sandpipers, etc. Legs long, bare of feathers from above the knee; toes often half-webbed. Bill in general long and slender.

Order VII.—Natatores or *Palmipedes*. Swimmers: web-footed birds, as ducks, geese, gulls, etc. Feet formed for swimming, in general webbed, that is, the toes connected by a membrane. Hind toe elevated above the plane of the others. Bill various, mostly flattened.

Mr. Sclater (partly following Huxley and others) has proposed a system of classification which has met with much acceptance, and is bared partly on external, partly on internal features. Regarding the class Aves as divided into two subclasses, *Carinātæ* and *Ratitæ*, the former containing all birds that have a prominent keel on the sternum (Lat. *carīna*), the latter having the sternum flat and raft-like (Lat. *ratis*, a raft), he divides the former into twenty-three and the latter into three orders, thus:

Carinatæ.—I. Passeres, with four suborders (including more than half of all known birds, and substantially corresponding with the older order Passeres or Insessores). II. Picariæ, with six suborders (woodpeckers, swifts, goatsuckers, trogons, toucans, cuckoos, etc.). III. Psitacci (parrots). IV. Striges (owls). V. Accipitres (eagles, hawks, vultures, and other diurnal birds of prey). VI. Steganopodes (pelican, cormorant, gannet, etc). VII. Herodiones (herons, storks, bittern, etc.). VIII. Odontoglossæ (flamingoes). IX. Palamedeæ (screamers). X. Anseres (geese, ducks, swans). XI. Columbæ (pigeons). XII. Pterocletes (sand-

NEST OF THE WOOD PEWEE

NEST OF THE RED-WINGED BLACKBIRD

grouse). XIII. GALLINÆ (fowls, partridges, pheasants, grouse, etc.). XIV. OPISTHOCOMI (includes only one bird, the Hoatzin). XV. HEMIPODII (Hemipodes, a small group). XVI. FULICARIÆ (rails, coots, etc.). XVII. ALECTORIDES (cranes, bustards, trumpeter). XVIII. LIMICOLÆ (snipe, woodcock, curlew, plover, etc.). XIX. GAVIÆ (gulls). XX. TUBINARES (petrels). XXI. PYGOPODES (divers, auks, grebes). XXII. IMPENNES (penguins). XXIII. CRYPTURI (tinamous). Subclass RATITÆ.— XXIV. APTERYGES (apteryx). XXV. CASUARII (cassowary and emeu). XXVI. STRUTHIONES (ostrich, rhea).

Birds are not numerous as fossil organisms. Among the most important and interesting bird fossils we at present possess are the two specimens of archæopteryx found in the slate quarries of Solenhofen (Bavaria). This bird differed from all existing birds in the elongated reptilian nature of its tail, which was composed of simple vertebræ, each bearing a single pair of quill feathers. It had also teeth. They certainly tend to prove the evolution of birds from reptiles. Other two most interesting fossil birds are the ichthyornis and the hesperornis, both found in the cretaceous formations of North America and both provided with teeth; but while the former must have had powerful wings the latter was quite wingless.

Ornithorhynchus (o r - n i - t h o - ring'kus; *Ornithorhynchus paradoxus*), the duck-billed water-mole of Australia. With the echidna or porcupine ant-eater of Australia it

Ornithorhynchus or Water-mole (*Ornithorhynchus paradoxus*).

forms the order Monotremata—the lowest division of the mammalian class. This curious animal was first described by Shaw in 1792, and caused no little excitement among zoölogists. It presents a quadruped, of the shape and size of a small otter, covered with short brown fur; a horny flat bill like a duck; a short flat tail; short legs with five-toed and webbed feet, terminated by claws. The eyes are small; external ear wholly wanting. The skull is bird-like in conformation; brain without convolutions; coracoid bones as in birds well developed. Its young are produced from eggs, are born blind and hairless, and suckled from milk-glands destitute of nipples. It forms large burrows in river and lake banks, rising from near the surface of the water to a height of perhaps twenty feet above it, the nest being at the higher end. It swims for its food, which consists of insects, worms, larvæ, etc.

Orobanchaceæ (or-o-ban-kā'si-ē), the b r o o m-rape family of plants. Their general properties are astringency and bitterness. The calyx is divided, persistent, inferior; the corolla hypogynous, irregular, persistent, æstivation imbricated; stamens, four; ovary free, one-celled, with two carpels; style, one; stigma, two-lobed, divided transversely to the carpels; fruit capsular. The Orobanchaceæ are herbaceous parasites, with scales in place of leaves, and attach themselves to the roots of different plants, as the *Orobanche major* to broom and furze, *O. ramōsa* to hemp, *O. rubra* to thyme, *O. hedĕræ* to ivy.

Orobus (or'o-bus), a subgenus of the genus *Lathyrus* (which see).

Orography (or-og'ra-fi; Greek *oros*, a mountain), the description of mountains, their chains, branches, etc., or the mountain systems of a country collectively.

Oronoko. See *Orinoco*.

Or'onsay. (ō'ron-sā), small island of Scotland, on Loch Sunart.

Orontes (ō-ron'tēz), a river of Syria, rising on the east of the Anti-Libanus, and entering the Mediterranean; entire course about 200 miles. It is not navigable.

Oroshaza (ō-rōsh-hä'zo), a town of Hungary, about 30 miles northeast of Szegedin, in a cattle-raising and wine-growing district. Pop. 21,385.

Orosius (o-rō'si-us), a Latin historian, born in Spain about 390 A.D., became a Christian presbyter, resided a considerable time with St. Augustine at Hippo, and wrote at his suggestion a general history of the world (*Historiarum Libri vii. adversus Paganos*), to prove that the Christians were not to blame for the downfall of the Roman empire as the heathen alleged. It is a worthless compilation, but for long enjoyed a great popularity, and was trans-

lated into Anglo-Saxon by King Alfred with modifications and additions.

Orotava (ō-rō-tä′va), a town and port of the Canary Islands, in the northwest of the island of Teneriffe. The town is about 3 miles from the port, and is a favorite summer residence of the rich Canarians. The port has a considerable trade. Pop. 9002.

Orphan Asylum, or ORPHANAGE (ōr′fan-ij), an establishment in which orphans are provided for and educated. In all well-regulated states the duty of taking care of destitute orphans was recognized at an early age, and it appears that the cities of Thebes, Athens, and Rome had establishments in which orphaned, deserted and illegitimate children were supported and educated at the public expense. In the laws of Emperor Justinian there is frequent mention of such institutions. In the middle ages such asylums were numerous and generally under the direction of the clergy. In recent times public orphanages have been substituted or supplemented by the farming-out system, that is, the children are brought up in private families willing to undertake their charge. This system, with due care in the selection of guardians and judicious supervision, has proved satisfactory wherever it has been tried. It is more economical, and the example of respectable family life cannot fail to have a beneficial moral influence. Orphan asylums, as conducted in the United States, are supported as private institutions, assisted by legislative appropriation. They are fostered also by the religious denominations. The most important among them is Girard College, Philadelphia, which is an orphan asylum on a grand scale and a power for good.

SEP 25 1918

LIBRARY OF CONGRESS
0 038 701 308 8